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MODERN CONTROL IN PHOTOGRAPHY

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Edited by

JOHN ERITH

F.R.P., F.R.P.S.



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THE FOUNTAIN PRESS : LONDON

First Published 1951

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MADE AND PRINTED IN GREAT BRITAIN BY
CHARLES BIRCHALL AND SONS, LTD.,
LIVERPOOL AND LONDON

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INTRODUCTION

IN comparatively recent years there has been a widespread change of attitude towards the question of 'control' in handling the photographic processes.

At one time, interest was chiefly centred upon modifications carried out manually after the exposure of the negative. To-day, the photographer prefers to work as far as possible within the range of his medium, and to exploit the distinctive photographic qualities to the full. In order to do so, he needs to have complete mastery over equipment and materials.

Subsequent handwork to negatives and prints is still an unavoidable necessity in many branches, but the aim is to reduce all forms of after-treatment to the minimum. The exercise of 'control' is mainly confined to selective arrangement of the subject-matter, choice of lighting and viewpoint — and in certain cases, accurate timing of the moment of exposure — in such a way that the resulting picture contains all the elements in significant form.

The chief purpose of this book is to demonstrate the application of the modern conception of 'control' in various fields of photographic practice. Each contributor is a recognized authority in the branch in which he specializes, and it is with complete confidence that I leave the reader to profit by the sound advice and practical information given in each section.

JOHN ERITH, FIBP, FRPS,
(*Editor*)

Control in Pictorial Photography

BY BERTRAM SINKINSON, FIBP, FRPS

IF I were asked what, in my view, was the most important element in picture making I would sum up the question in one word — 'purpose'. The secret of good pictorial work is that it should have some message or theme to convey, for success is absolutely dependent upon this element. The principles of composition (the most essential 'control') can materially assist us to say in our pictures what we wish but no measure of sound arrangement will produce a satisfactory picture if the purpose is not a worthy one in the first instance. If true motive be lacking the result, at best, is nothing more than a five finger exercise in space filling.

The Most Difficult Control

Whilst it is true that the majority of pictorial workers firmly believe they have selected a good subject before the actual exposure is made it is true to say that in nearly every case the element which caught the attention is largely dominated by extraneous detail. I think here we have discovered the most difficult part in photography; the control of unwanted detail and the conscious perception of competing elements in relation to the principal theme.

The Cause of many Exhibition Rejects

The lack of subjection of items in competition with the main purpose of the picture is the cause of many rejections of considered contributions to pictorial exhibitions. It is true to say that within certain limits photography, as a means of creative expression, offers many opportunities for individual control and this is well evidenced by the contents of this book. It must be remembered, however,

that the camera and all the manipulative processes which go to produce a positive print are a means to an end and complete mastery of the mechanics of the process will be utterly wasted unless the worker possesses, as a driving force for his activity, a desire to present individual thoughts and ideas.

The need for Critical Analysis

Critical analysis of the subject we wish to record is a first principle of pictorial presentation and in addition we must bring to bear all our knowledge of skilful selection if success is to be achieved. Accepted principles of arrangement are used to produce certain effects and it is not out of place to remind ourselves that they are employed by all workers in the creative fields whether the medium of expression be semi-mechanical like the camera or based on the reliance of the artist on his own ability to create images by hand. The main difference between the artist and the photographer is that the former selects that which he wishes to record and gradually builds his picture piece by piece to the final stage. He does this with a measure of confidence because the attainment of proficiency in his case is a gradual process. The ability to create by hand acceptable images is a procedure which is slow. Dexterity in the use of pencil or brush is only achieved by continued practice and whilst this practice is being experienced the artist at the same time associates with it a lively interest in the mechanics of picture presentation and so these two elements develop together.

The pictorial photographer, on the other hand, has many disadvantages, usually he has little or no knowledge of the mechanics of pictorial representation and he uses a tool which by virtue of its construction has the great disadvantage of recording detail in a most accurate manner. If we will appreciate that idea and technical execution must move together in the light of experience and that the artist's knowledge of composition usually exceeds the dexterity of his hands in the making of images during the early period we shall more readily appreciate the true relationship between the creative artist and the photographer and refrain from making fantastic claims with regard to the camera as a means of representation.

The Problem

If we will admit in the first instance that a comprehensive knowledge of control in relationship to the production of pictorial photographs is useless unless we have something worth controlling we shall in my view have established a proper starting point for our discussion. The problem as I see it is that so many pictorialists become involved in the intricate detail of manipulative control without realizing that it is necessary to have a creative urge. Without a desire and ability

to conceive original thoughts there is little purpose in endeavouring to manipulate the photographic medium. Furthermore it is necessary to realize how very desirable it is to restrict all control to the bare minimum commensurate with the perfect execution of the original motive. It is only natural that the layman will consider the laws governing composition, as practised by the artist, as being an essential factor for success. This attitude is a very sound approach providing that we acknowledge the existing limitations of photography as a means of expression. This limitation is largely a matter of monochromatic values and as proof of this fact we have only to consider our reactions to an overall impression of a photographic exhibition, even to international standard. I think it will be admitted that the first impact on the mind of the observer is one of monotony due to the limits of photography to suggest varying themes in monochrome. One finds oneself tending to concentrate on the detail of each contribution rather than the assimilation of a broad impression of pictorial idea.

Control by Instinct

There are many people who contend that picture building in any form is something that is controlled solely by the creative instincts of the individual and cannot be measured or limited by a set of principles. With this I am in entire agreement but it will be well to admit that there are few of us who are blessed with this cultivated creative instinct. We all have this faculty by nature but few attempt to use it with the result that it remains dormant and, like the little-used garden spade, becomes blunt and rather rough in performance when required. Pictorial photographers are noted for their lack of patience and the general desire is to achieve the end by the quickest possible means. We have at our command an instrument which by its scientific development has an inherent character for the delineation of detail. If we pause for a moment to review our activities and take stock of our individual position as measured by our progress from the pictorial angle we shall find that our greatest difficulty has always been the control of this recording of detail. The root of the trouble lies in the fact that we try to make pictures before we know anything about the pitfalls of pictorial procedure. Unless we have had the advantage of some contact or training in art principles it is almost impossible to comprehend the difficulties even when they are pointed out to us. Volumes have been written on this topic but rarely does one come across a publication which can thoroughly be understood by the layman. One of the major difficulties lies in the terminology which is used by most writers. It is a borrowed language from the arts and requires a fair period of time for study and practical contact for the text to be properly understood and applied. May I suggest that we are inclined to view this question of picture building in a very limited way. Many, if not all, of

the emotions aroused by pictorial representation on a flat surface can likewise be experienced in other forms of culture such as music and literature. If we make it our business to take an interest in these other aspects of cultural development our pictorial progress will be much more rapid. The primary function of any representation within four boundary lines whether it be produced photographically or otherwise is to convey a message and on this solitary fact failure or success will depend. The means which have been employed such as processes, technique, procedure, forms of compositional construction are entirely subsidiary issues. A full knowledge of these facts will assist us to be successful as purveyors of messages and it would, therefore, seem appropriate that we should consider some of the elementary constructional principles connected with picture building.



Simplicity and confusion. Confusion (left) due to poor viewpoint and (right) a better composition due to simplicity of subject matter when the best viewpoint is found.

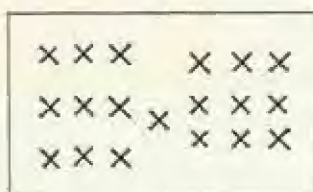
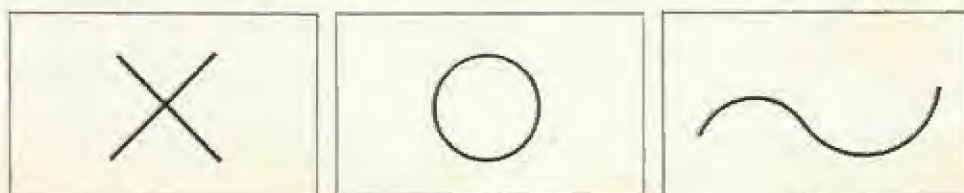
The Approach

I have for some time felt that even if one has an acquaintance with the terminology which is used by the creative artist the application of any suggested principles is a difficult problem. The lay mind is confronted at a very early stage with the necessity of linking several basic constructional requirements with a subject which may suggest possibilities. Unlike the creative artist we cannot claim initial creation. When the subject is condensed within four boundary lines the amount of detail presented is truly amazing and if the pictorialist is not prepared to meditate on his subject for some time before he makes the actual exposure he will find that the result he obtains falls very far below the rapid mental reaction he received in the first instance.

Simplicity

One of the acknowledged virtues in life is simplicity and in all cultural activities the more we tune our minds to the appreciation of perfection the more do we realize that this is the key to successful performance. In essence the term implies

the ready statement of fact and on this basis we can immediately appreciate the intentions of the author. How often do we find in photographic representation that the purpose of its making is obscure. Of necessity it demands clear thought as a first principle and the complete subjection of everything that is irrelevant. It would appear that the approach to our problem is eased by the acceptance of this virtue but it must be recognised that a methodical approach is necessary at



Simple elements command attention in a pictorial photograph. If many units are contained within the picture space (see left), attention wanders from one to the other and composition is weakened.

all stages to effectively convey the term simplicity. I do not wish to imply that all pictorial messages should be based on subdued themes but rather that whatever the motive we suggest for a theme it should be based on a direct presentation of the original idea with complete elimination of all that is unnecessary.

Pictorial Requirements

The first requirement of any pictorial representation is that it shall have the power to command attention, and time has proved that the pictures which most effectively carry out this requirement are those containing simple elements. The eye will always take the line of least resistance and if many units are presented within a given shape the attention of the observer wanders from one to another. This hesitancy creates a restless feeling and is not conducive to stability. If we place on a white sheet of paper of any proportions an abstract symbol such as a cross or line we shall find that this element attracts attention because it exists alone. It is dominant because there is nothing to compete with it. It is true that if we gaze at it for some time we shall soon become tired of its existence. If we now place several crosses adjacent to the single one in two separate groups we shall find that our attention is diverted from the single unit to the groups of units which have been introduced. An element of competition

has now come into existence and the eye moves from one unit to the other. In due time the attention will come back to the one unit.

This question of principality or emphasis is achieved in this simple experiment. By the power of one single unit isolated by itself and even when associated with other units of the same size and shape its singularity still commands attention. This is a useful factor to remember, for an ideal composition is always one where the main object predominates and is ably supported by subsidiary elements. The object which first commands our attention as suitable material for pictorial purposes must remain the dominant note in the picture which we present to the observer.

Shapes and Sizes

It is fairly evident that the object of our attention can be made to occupy any position within our framework that we wish, and whilst placing has something to do with the power of attraction the ultimate size of the given object in relationship to other items also plays a part in the final result. It is well to remember



*A tall vertical shape
suggests dignity.*

that we have at our disposal varying shape forms with which to present our theme and it is not often realized what a profound effect the shape of the picture area has on the contents placed within. It is not without significance to mention that the pictorial photographer usually confines himself to the shape which his camera size depicts. He should, however, realize that he is not bound to accept these restrictions. It is common practice to make use of a selected area of the negative by masking the remainder away but this procedure is not so satisfactory

for the student in pictorial matters as filling the picture area to the extreme limits prior to making the exposure.

Although the shape of the frame can suggest some emotional value this element cannot become an actual fact until we place something within the frame. Only at this stage can the frame exert its influence and this power varies according



A long horizontal format conveys a feeling of expanse and restfulness.

to the position within the four boundary lines that we place our principle object. We are too well aware of the guidance that is given to us in connection with the emotional import of frame dimensions. A tall vertical shape suggests dignity and height whilst a long horizontal format conveys a feeling of expanse and restfulness. These associations are not trivial sentiments expressed by critics from time to time. They are fundamental facts which have been proved for generations by the creative artist in varying fields.

We would no more consider trying to present an impression of loftiness with a skyscraper as the subject matter in a horizontal format than one would proceed to present the emotions of a landscape in a vertical framework; and yet many inexperienced photographers endeavour to do this impossible task. At the present time the square format is popular and as a 'safe' proportion of framework for early experiments it is commendable. The square as a framework for pictorial representations has a low emotional value because all the sides are equal. There can be no tug of war between two pairs of boundary lines which are identical in length. The square is a simple shape and has little character to force on any subject matter which may be placed within. Immediately the length of either pair of lines is varied we begin to exercise control on whatever is placed within. A narrow shape with a long base line shows lateral movement and stability and is often used for landscapes where an impression of restfulness and depth is required. If the same shape is turned so that the narrow side forms the base line an entirely different impression is created. We now have a suggestion of height, dignity and upward movement. ✓

The Boundary Lines of a Picture

It should be apparent to the reader that each of the four lines has an important part to play. The base line, for instance, is the foundation on which our picture rests, if we will always consider it as such and, particularly in relationship with



Too much weighty tone matter in upper portion of picture area implies a downward thrust—which may not help the composition.

tonal distribution, it will be easy to appreciate that this line plays an important part in the measure of security which any arrangement may convey. It is normal to present the lower tone values in the base portion of the picture for this reason. If we view our framework in the same manner as a box it is easy to appreciate that if we place too much weight at the base of the box the bottom will collapse. Under the same manner of reasoning the upper line is one from which we normally suspend units. It is in this particular area that our cloud formations are generally contained and here again if too much weighty tone value is allowed to concentrate in the upper portion of our picture area we shall imply an impressive downward thrust.

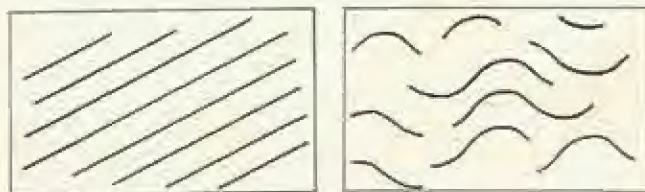
It must also be remembered that the four boundary lines of our picture are there to imply the limits of appreciation that we desire to be exercised by the observer. At the edge of those lines our picture terminates and we must always be careful to see that we do not, by mis-management, suggest to the observer that we desire him to seek for information beyond those four boundary lines. —

Important Factors in Composition

It is not possible within the confines of this contribution to deal extensively with all the recommended principles of composition: the most effective means of control. At best I can only pin-point the more important factors involved so

that the reader might further his researches in the various directions. My true aim is to mention as far as possible all the variables over which we have control. It is common practice to analyse pictorial photographs by line diagrams and while this procedure can be extremely useful it is not always the easiest method to understand. The photographic image is a continuous tone process and the nearest one can get to dominance of shape and suggested line is where sharp contrast of tone values come together and make a firm pattern. A large object within the framework will only remain a point of emphasis if it has no competition from other elements of the same size or greatly competing detail. If the arrangement should contain suggestions of further shapes of equal size the dominance of the principal unit will be weakened. This can easily be proved, for how often do we find in an arrangement of large formal shapes the element which holds our attention is a small unit which has power by virtue of its isolation.

So far we have admitted that a variation in picture format can be conducive to creating different impressions and we also have the power to emphasize any particular object by virtue of the dimensions with which we display this object within a given framework. One of the best examples of this argument is in portraiture where it is common practice to place large heads within a confined space to suggest power and character. Also in landscape work the greatest effect of drama and magnitude is usually presented where clear cut units are placed in a high position within a framework and presented in strong tonal contrast.



Straight lines have a strong pulling power, while curves and small shapes create fussy effects.

Lines in a Composition

Apart from position we have to realize that lines play an important part in the power to hold attention. Straight lines have a very strong pulling power in any composition, whilst curves and small shapes create fussy effects by virtue of the energy which is required by the eye to follow their contours. One single vertical line has much more power when placed against many horizontals. If you have many vertical and horizontal lines it will be found that any indication of interest that traverses in a diagonal direction will become the dominant element.



One vertical line has much more power when placed against many horizontals.



A diagonally positioned subject will usually become the dominant element in a picture.

Textures can likewise play an important part in this question of emphasis. We are all too familiar with the disastrous effects that are sometimes seen in landscapes where the foliage of trees bursts forth into an open sky. They form a complicated tracery to which the eye is attracted and very often the attention demanded by this element far outweighs the power of other objects which were the purpose of making the picture. It is useful to remember that by the wise choice of the surface of the printing paper considerable control can be exercised in breaking up fine detail, and many arrangements can be given greater breadth of feeling by employing the rough textures when making the positive print.

To sum up the situation in connection with suggested line formation of units it will be seen that the vertical line is perhaps the most important. It is associated with our instinctive sense of gravity and balance. Vertical lines stand alone in composition for they require no support as does the diagonal line. They convey a suggestion of dignity, height and aspiration and these reactions are to be found in architectural representations. Horizontal lines have many of the attributes of the vertical line but with less force. They may be taken as being symbolic of the earth and, therefore, convey a sense of stability especially when placed at the bottom of the picture space. Horizontal lines, therefore, must suggest repose, quietness, and these reactions are usually found in landscape representations. Diagonal lines are essentially connected with movement when used alone and unsupported. Unlike the vertical and horizontal line, they challenge our sense of gravity and convey the reaction of falling.

Modifying Compositional Lines

The use of one type of line alone is rarely considered in picture making. If we examine illustrations from any well-known pictorial work we shall find that the images are formed by a mixture of straight lines varying in direction and curved lines of many types. To enable us to emphasize any particular part of the view

which we are endeavouring to record it is necessary that we should fully understand how such lines could be modified. A good way of doing this is to take a positive print from any photographic negative, place a piece of tracing paper on the surface and with a soft pencil trace out the main outlines of the images. This will give us a simple line indication of the main forms contained in the area and we shall then be able to appreciate the proportions of straight and curved lines which make up the whole arrangement.

Tone Areas Forming the Units

Whilst it is useful for the purpose of analysis to discuss the images formed by the camera lens by line diagrams, we cannot ignore the tone values which the photographic process presents. Areas of light, intermediate and dark tones can be controlled in many ways to convey varying moods. If our picture is to be made up of heavy values, the effect will be sombre and dramatic. On the other hand, if the frame is filled with light and delicate areas of tone, the effect will convey delicacy and airiness. By carefully controlling the mixture of these two



Large areas of tone clearly defined and widely separated produce an effect of vitality and dramatic quality.

extremes the composition can be made restful or exciting; and as the photographic process consists essentially of black, white and intermediate tones we should have a very full knowledge of tone distributions to enable us to convey various moods.

In outdoor photography nature provides varying moods and the skilful photographer produces his records at a given time which he may think appropriate to the particular subject.



Large areas of dark opposed by similar areas of light, clearly separated, convey solemnity, tragedy or mystery.



To make black powerful — isolate it in an area of light tone.



A small area of light opposed to a large area of dark will give more brilliance than vice versa.



Mystery can be achieved by leaving something to the imagination; by having faint or out-of-focus lines in the shadow portion of the picture; or by having the lines themselves mixed with faint tone or shadow.



Repose, quietness, etc., can be produced by avoiding sharp contrasts of light and shade.



Action and movement can be achieved by the use of diagonal arrangement of tonal contrast.

Control of Tone Values

In the studio where lights, reflecting screens and the backgrounds are all movable the results can be controlled at will by the photographer. The most difficult task in composition is the control of these tone values and for the purpose of our discussion they may be divided into three broad masses — light, middle-tint and dark which, to convey a given idea, it is necessary for us to note the effects of various arrangements of tone, and how these can be influenced by different factors. Under this heading distribution is of primary importance and means the arrangement or placing of areas of light or dark in the containing frame or rectangle. Large areas of tone clearly defined and widely separated produce an effect of vitality and dramatic quality. Large areas of dark opposed by similar areas of light, clearly separated, convey solemnity, tragedy or mystery.

Large areas of light with little dark give cheerful, bright effects and tones of dark or light not separated produce a certain flatness. When discussing the quality of the photographic image it is common to use the word gradation, or the gradual transition of one area of tone into another.

Those areas which have not been clearly defined with borders or edges are usually found in the sky portion of landscapes or the larger masses of drapery in portraiture. It is useful to remember that light is more attractive and powerful than dark. If it is desired to make black powerful this can be achieved by isolating it in an area of lighter tone. Brilliancy is not necessarily obtained by using a large measure of light. A small area of light opposed to a large area of dark will give more brilliancy than a large area of light opposed to a little dark. Likewise, if it is desired to increase the force of the principle object in any given arrangement in the composition strong contrasts of light and dark can be used and this system is very often put to excellent effect in many of the advertising photographs produced for reproduction.

It will be seen that tone as well as line plays an important part in the emotional reaction from any given arrangement. Repose, quietness and restfulness can be produced by avoiding sharp contrasts of light and shade or by interposing middle tints between larger masses of light and dark, also by keeping the contrasting parts of the picture small in comparison to the size of the picture.

Mystery can be achieved by leaving something to the imagination, by having faint or out-of-focus lines in the shadow portion of the picture space, or by having the lines themselves mixed with faint tone or shadow. And lastly, action and movement can be achieved by the use of diagonal arrangement of tonal contrast in the same way that diagonal lines themselves produce a feeling of motion.

The Purpose of Making a Picture

Our survey, so far, of the principles of composition has dealt entirely with the elements of mechanical construction; in other words we have been trying to find out the meaning of generally accepted principles of arrangement which are used to produce certain effects. These constructional details are employed by all workers in the creative field whether they be using a mechanical recording instrument such as a camera or relying, like the artist does, on his own ability to create images by hand. The main difference between the artist and the photographer is that the former selects that which he wants to record and gradually builds his picture to a final stage piece by piece, whilst the photographer has to select a portion of that which is in front of him and, by applying the rules of arrangement which have been discussed, he endeavours to present his picture in the most satisfactory manner.

It must never be forgotten that suggested methods of arrangement in themselves will not make a satisfactory picture. The all important thing to remember is the purpose for which the photograph is to be taken. It may be that a photographer is called upon to produce a photograph inside a works and here he may have to show to advantage certain pieces of machinery. He can apply his knowledge of composition and exercise control by placing his camera in such a position as to show the important conditions of light and shade at the appropriate time of the day, thereby presenting his finished photograph under the most effective conditions.

Likewise when a photograph has to be taken of an architectural subject the position of the camera, once more, is important. Movement to the left or right of a given position will often show certain features of the buildings to a greater advantage and avoid uninteresting elements such as lamp standards or telegraph poles.

Control in the Studio

In the studio one's power over arrangement is greatly increased. Here we are working more to the conditions of the creative artists in the sense that our lighting and what we do with the model is entirely under our control. We may place the head of the sitter in a high position on the focusing screen, we may suggest turning the head from left to right, we can command the sitter to place hands or arms in any given position. We have control over the background and the strength of tone which can be employed. Likewise, in a still life arrangement under studio conditions the ultimate effect is largely governed by our knowledge of placing things and making the very best use of cast shadows.

It cannot be too strongly emphasized that the most satisfactory results are obtained by contemplation, in the first instance, before actual exposure is made. Whilst great improvements can be effected by selecting a portion of the negative, or trimming a given print to different dimensions, it will be readily seen that the amount of control by these means is strictly limited. Principles of composition can only help us in our work if we use them to assist us to tell the story. The purpose for which we take a photograph is the most important factor and should be foremost in our mind always. The type of camera we use, the exposure we give, the lighting technique we employ, the type of print we produce, are all subsidiaries in a manipulative process to convey a given message.

Summary of General Principles

A full knowledge of composition can only be obtained by constant study over a long period of works produced in other spheres. Every opportunity should be taken to visit exhibitions of paintings and drawings of all kinds and also collections of photographs produced by acknowledged specialists. The illustrations to be found in journals and magazines will help us to extend our knowledge of the principles of arrangement. By constantly comparing the work we produce with that of other people we shall, to some extent, discover our own weaknesses and observe the facts which will help us to rectify early mistakes. The secret of pictorial arrangement is to be found in the critical analysis of one's own work, and this is best done by analysing every photograph we take under the headings already indicated. For instance:

Is the picture shape suitable for the subject matter.

Has the principle object been placed in the most important position in the picture frame.

Do the various areas of light and shade form a satisfactory design.

Has anything been included which is not part of the subject matter.

By asking ourselves these questions every time we take a photograph we shall find we are able to observe more readily the unimportant elements which are so often distracting, and thus disturb the completeness of the ultimate result.

The Effects of Light

One cannot leave the consideration of control through an understanding of the mechanics of image presentation without directing attention to the necessity of comprehending effects of light. Light is not capable of going round corners and if it strikes a solid object it is bound to cast a shadow. Shadows provide useful masses for space filling and the proper distribution of light and dark is the

kernel of the problem of pictorial representation. I would strongly advise anyone who is just beginning to take an interest in these matters to concentrate on outdoor subjects for it will be found that variations of effect produced by nature are tremendous. The same subject will present an entirely different aspect at varying times of the day and at different periods of the year, and certain conditions may never present themselves again. Perhaps this is the reason why pictorial photography is so fascinating because nature continually presents different problems and the most interesting of these usually occur when one least expects them.

Having found what one considers to be a suitable subject it is a good plan in the early stages to pay many visits to the area and spend time in noting the changes of lighting and atmosphere and a record should be made of any effect that is considered worth-while. These pictures provide a very fine basis for study and the technical experience gained in making them is well worth-while. By this process of gradual contemplation it will be found that practice along creative lines is more sure.

Many picture makers produce on rare occasions good things by chance and they do not comprehend why the conditions were so, much less do they acquire the ability to produce a like effect on different occasions. If some time is given to this methodical procedure it will be found that one is more prepared to commendably manipulate light in the studio or home. For instance, it is much easier with this knowledge to comprehend the range of values between high-light and deep shadow in relationship to the responsive scale of the negative material.

The Positive Image — Print Quality

I mentioned earlier the danger of a reaction of monotony where a collection of photographic works are gathered together for display. This is due in no small measure to the presentation of prints by a limited number of processes. How often do we find in current international exhibitions that most of the images are presented either by the bromide or chloro-bromide processes. It cannot be denied that these two printing mediums offer considerable scope, but there is a tendency to forget that one of the virtues in pictorial presentation is the association of the original theme with an appropriate printing medium. It is possible by the correct choice of the grade of paper to manipulate the contrast of tonal values and a further opportunity presents itself when we consider the colour of the base and the type of surface.

I need hardly remind you that warm tone images on cream bases are most appropriate for any effect where sunny and lively results are required. In



WELSH PASTURES. *This is essentially a sky picture and the choice of a square format was purposely made so that no feeling might be apparent of the desire to have more included in the landscape portion. The low placing of the trees and foreground was intended to produce an effect of great distance. Whilst on this particular occasion there was a lack of atmosphere which would normally add to the recessionary values, the dark foliage in the foreground helps to overcome this weakness. Additional control in printing in this area was resorted to to achieve this effect.*



SKY DRAMA. The motive here was to create out of a given circumstance a pattern picture and the deep print gives a feeling of dramatic quality which was present on that occasion. In this instance a 2X filter was employed on panchromatic material and the exposure calibrated for the brightest part of the sky portion.

addition, many toning processes can be employed to convey an appropriate feeling of coldness. There are many occasions where detail has to be subdued and broad effects are required. A mechanical means of achieving this result is by the introduction of diffusion during the positive printing stage. Whilst it is possible to soften unwanted detail it must not be forgotten that a grave danger exists in the general flattening of relevant tone values if this diffusion is introduced by any other means than optical ones.

In my view it is a pity that greater use is not made of the controlled printing processes such as gum bi-chromate Bromoil and Bromoil transfer. I should be the last person to say that control should be introduced to such a degree as to destroy the inherent photographic image quality but I cannot understand why the processes mentioned should not be favoured on the basis of being non-photographic whilst many of their critics produce pictures which are a combination of several negatives. If we accept the theory that pictorial expression is far more important than the considerations of mechanical procedure it must surely follow that all methods of control, providing they are harmoniously harnessed to a pictorial idea, are legitimate. It is far preferable in my view to utilize a control process to convey what one desires than to pound the surface of a bromide print with pigment or graphite the results of which are too often evident to the observer. To sum up I would say that all methods of control are acceptable providing they do not conflict with photographic values, and their application



*"L"-shaped cards
should be used to
decide proportions,
etc., before making
final print.*

is not evidenced. If this should be so the purpose of manipulative action is wasted.

The main factor which we have to realize is that the positive print represents photography; this is the evidence which we submit for the consideration of the general observer. It is most important that we should realise that technical perfection and effective presentation are primary factors for success. It would be wrong to assume that careful mounting and appropriate titling are sufficient elements in themselves to produce first-class results. It is also right to note

that many examples of pictorial photography are ruined by carelessness in final presentation.

The Presentation of the Print

When making contributions to an Exhibition the work will stand or fall by the impression that it immediately creates on the selectors. The several factors which control this first impression are as follows —

- a does the picture tell an effective story or has too much been included ;
- b is the print of good quality and the size and proportion appropriate to the subject matter displayed;
- c has the print been tastefully mounted on to a support that is in keeping with the tonal scheme of the picture;
- d has the title been wisely chosen (if indeed a title be necessary) and if so has it been well executed.

I have already mentioned that photography is largely a matter of selected small portions from a greater whole. Our eye moves quickly from point to point as we observe any given scene. The camera records mechanically everything that is placed within its angle of view and it may not always be possible to approach the subject at such close range as one would desire. It is a very good plan to make prints for consideration from possible negatives to dimensions not less than half plate. If these prints are studied and preliminary masking is decided upon by the use of two 'L' shaped pieces of card forming a variable framework one can arrive at the most satisfactory proportion prior to the actual making of the enlargement. The importance of this preliminary survey is not generally realised but in view of my previous comments with regard to the effect of the final format of the print in relationship to the subject matter its importance will be appreciated.

In the early days of photography it may be remembered that the worker had complete freedom to mount his pictures on any substance which he thought desirable even to the extent of framing the final unit, and many people believe at the present time this is a desirable freedom. It must be appreciated that the purpose of the mount is to isolate a picture from that which surrounds it, thereby enabling the onlooker to devote the whole of his attention to the expression of an idea in an inviting manner. My experience has taught me that this is the true purpose of supporting the print, for it is readily apparent when one enters an exhibition of several hundred photographs that one or two are bound to stand



WINDOW FRAMES. *The effect is one of pattern, and to simplify irritating details a soft-focus lens was employed when making the negative.*

out from the rest. If we analyse the reason for this predominance it will be found in most cases that the mount has nothing to do with it.

If it be true that the mount shall be subservient it is obvious that there must be no discord between the tonal range of the print and the mount. A surface plain in texture and quiet in tone is, therefore, a sound recommendation. Where the print is of a high key or where large areas of light tone bleed close to the edge of the mount it is often an advantage to surround the print with a line of either pencil or water colour. This is simply done to enclose the subject matter within a chosen shape and thereby creating a feeling of greater unity.

One general principle should be observed at all time: that of never having the same amount of border on all four sides of the print. In spite of the rules and regulations sent out by exhibition organizers there is nothing to prevent an exhibitor from presenting his work on any colour of mount he desires providing it supports his picture. If the tonal quality of the print be so strong that it looks more effective on a mount which is not white or cream the board of selectors will be the first to compliment him on his creative initiative. It is very debatable whether a title is necessary for every pictorial work. It has become a tradition that some introductory sentences be added to a picture to convey location or amplify a theme. In broad principle this is sound but there are many occasions when the picture itself is sufficiently illustrative to require no obvious introduction.

Such titles as 'A Portrait' and 'A View of Southend Pier' are obvious examples of what not to do. In the main any print which suggests a mood or humorous theme is much more effective if it has an appropriate caption to indicate at once the essential purpose of its presentation. Many exhibitors make a profound error in applying these titles in a crude manner. They should be short and the lettering in good taste, and like the mounts they should be subservient to the print itself. The same remarks apply to the personal signature. It can be argued that the worker's signature is unnecessary and with this I do agree up to a point. Distinguished work is easily recognisable and any experienced worker can promptly indicate the producer of a given print by virtue of its style of presentation.

Creative Ability

Much that we have discussed so far concerns the mechanics of control and pictorial arrangement. With this knowledge the pictorialist should be enabled to continue his search for pictures with a quiet confidence and by and by he will reach the stage when the true secret of pictorialism will become apparent. This secret is more than an expression of procedure which can be defined in



WINDOW PATTERN. *An effort was made here to record a rather intricate effect of the angles of the building and deep shadows, suggested by the strong lighting conditions. This is an absolutely straight print.*

recommended rules and formulæ. It is an attitude of mind towards things beautiful and a desire by the individual to express in some medium or other. For convenience we have selected photography as a carrier for our ideas and if we will accept this fact and now concentrate on the creation and execution of ideas via our medium we shall indeed be travelling along the proper path to pictorial accomplishment. In the early days of pictorial photography there has been great debate on the question as to whether this particular medium can be classed as truly creative. It has never been easy to convince the non-photographic mind that great works can be produced by the camera. This is largely due to the large amount of pictures of a documentary type which are produced with no pretensions to orderly arrangement and almost a complete absence of creative motive.

I think it must be admitted that photography has its limits as a medium for expression because in general it is practised in the field of monochrome and the amount of manipulation in connection with image control is restricted. The realization of this fact generally acts as an incentive to the keen pictorialist and his constant endeavour is to make the fullest use of his process in order to portray his conception. Creative ability is nothing more than the power to comprehend and meditate upon something which has aroused within us an emotional reaction, and then to place it on record via a suitable medium, for the pleasure of others.

Whilst making the statement that photography is generally practised in monochromatic values, I do not wish it to be thought that I am unaware of the problems connected with photography in colour. From the earliest times this goal has been in the minds of many who contemplate the photographic medium from the scientific aspect, and in recent years great strides have been made in this connection. We have become accustomed to being able to produce, with relative ease, transparencies in colour, and in another section of this book reference is made in some detail to the existing positive colour processes.

Control in Portraiture

BY JOHN ERITH, FIBP, FRPS

PORTRAITURE is generally accepted as one of the most difficult branches of photographic work. The reason is not that technical standards are more exacting than in other fields — as a generalization, the very opposite may be said to be the case — but rather that the photographer is faced with complex psychological considerations which do not affect other workers to the same extent.

Because the portrait photographer is concerned with the representation of human beings, his work is judged, not so much upon the accuracy with which his subjects are reproduced, as by what we call 'likeness'. I have already dealt at some length with the influence of the 'human element' in my book on portraiture (*Erith on Portraiture*, published by Fountain Press). Whilst it is beyond the scope of the present article to devote equal attention to this aspect, a brief outline is desirable in order that the reader may visualize the term 'control' in a wider sense than the handling of apparatus and materials. I propose, therefore, to summarize certain relevant passages before passing on to purely practical matters.

(i) What we call 'likeness' in human beings is not based on a matter of fact, but depends upon a mental impression influenced by many indirect, and often illogical, factors. For this reason, no two people are likely to form exactly the same impression of a third party. Each unconsciously tends to select certain features of the face, certain expressions and gestures, which seem to him most characteristic, and in this way forms an entirely personal 'mental picture' of the individual in question. The variation in the impression one person may make on another is governed by such matters as age, character and personality. Also

by the degree of intimacy in the relationship, and by the presence of sympathy, indifference or antipathy between the parties. For instance, if we are in love with someone, we shall be likely to think first of his most attractive features, both physically and mentally. But if we dislike him intensely, we shall almost certainly base our impression upon the very opposite characteristics. If the divergent 'mental pictures' could be compared, the two versions would probably be so different that they would be unrecognizable as the same person. Both would appear equally false to a third party who remained free from emotional bias !

(ii) People are seldom good judges of their own likeness. For one thing, most of us base our opinion upon what we see in the mirror, in which the image is reversed. But apart from this, human nature being what it is, we invariably hope that we are a little better-looking than is actually the case. Sometimes this 'wishful thinking' reaches astonishing proportions.

(iii) The faculty of self-deception in the way just described extends to those who live in close association, who frequently fail to notice changes in each other which have taken place gradually, although the alteration is at once noticeable to a friend who has not seen them for some time.

(iv) The question of 'likeness' in portraiture is largely dependent upon the expression of the features. A portrait may be completely satisfactory in all other respects, but it will fail if the sitter is ill-at-ease when the exposure is made. Any feeling of self-consciousness will be reflected in the expression, and the result will probably be unacceptable on this account.

(v) When working in monochrome, the loss of characteristic colour features, which form an important part of our 'mental picture' of certain individuals, may cause an otherwise satisfactory portrait to be regarded as a poor likeness. This is particularly likely to be the case when the sitter's charm depends largely upon attractive colouring.

(vi) The use of colour photography does not provide a complete solution to the problem mentioned in (v), as apart from the fact that scientifically accurate reproduction of colour is seldom achieved in modern subtractive processes, once again the mind interprets and deception enters in. People frequently 'see' colour, not as it is in the present, nor even as the eyes see it, but sometimes as it was in the past, or as they would like it to be. In consequence a portrait may

on occasion be rejected on the grounds that the colour is 'unnatural', when, in fact, it is actually correctly reproduced.

It will be understood from the brief summary just given that the portrait photographer's task is by no means easy and straightforward. Success depends to a greater extent upon an understanding of human character, and a sympathetic approach to the sitter, than upon purely technical considerations. The portraitist is under the necessity of dealing simultaneously with two distinct problems. In all but the cheaper types of commercial portraiture, difficulties associated with the 'human element' are sufficiently intimidating without including the necessary additional preoccupation with technical matters!

The Portrait Photographer at Work in the Studio

The professional photographer is, in most cases, confronted with a complete stranger who is probably feeling nervous and self-conscious. During the vitally important minutes at the beginning of the sitting he must not only set his sitter at ease, but also be able to sum up the good and bad points of his subject 'at a glance' whilst chatting in a friendly way. He must manage this without arousing suspicion that he is doing so, as nothing is more embarrassing than to be aware that one is being stared-at and one's appearance critically examined by a new acquaintance. The photographer must try to form an opinion—based upon the general appearance, bearing and conversation of each sitter—as to how much of the truth is likely to be acceptable in the portrait; then immediately reach a decision as to the way he will arrange lighting and camera-angle to give appropriate emphasis to the subject's most pleasing and characteristic features, in order that he may create confidence by acting with speed and assurance at the outset.

During the course of the sitting, the photographer must maintain the impression that he is interested and charmed with the personality before his camera, and is finding him easy to photograph, even though the exact opposite may actually be the case! Whilst he is apparently giving his full attention to the sitter *as a human being*, he must before each exposure: (a) observe the effect, and often adjust the position of one or more lights, in order to obtain exactly the result he wants. (It must be remembered that any appreciable alteration in the sitter's position will affect the way in which the light falls upon the face. Unless the photographer is careful and observant, this may result in a shift of emphasis from good features to bad!); (b) alter the height and angle of the camera to ensure the most pleasing viewpoint; (c) be on the alert for any natural pose, expression or gesture which may help the characterization; (d) note any disarrangement of dress, hair or jewelry which needs correction; (e) focus the lens and change dark-

slides quickly and unobtrusively so that he is ready to make the next exposure at the moment when the expression is most natural and pleasing.

Studio Cameras and Negative Sizes

The use of comparatively large negatives is still essential in the majority of cases when photographing adults in the studio, on account of the difficulty of retouching negatives of small size. Generally speaking, 4-pl. is accepted as being the smallest practical size for head-and-shoulder portraits, if work of consistently good quality is to be maintained with the minimum of trouble. During the war, many photographers in this country were forced by the shortage of materials to use much smaller negatives. In my own case, both head-and-shoulder and three-quarter-length portraits were taken on *half* a quarter-plate during part of this period. The results achieved were of perfectly adequate technical quality, even when judged by critical standards. The use of my system of retouching — which will be described later — made it possible to retouch these small negatives satisfactorily, and without excessive hand-work to prints. In such cases, much depends upon the quality of the negatives and the skill in handling the lighting in the studio. There is likely to be trouble if the photographer has insufficient mastery in both respects. Needless to say, the same care in processing, and similar methods, should be employed as with 35 mm. negatives. Experience in working with these small sizes for photographs of adults did not alter my opinion that a larger negative is preferable. I reverted to former practice as soon as the supply position permitted.

Unfortunately, no new studio camera has been placed on the market for many years. Most photographers are forced to make do with the old and cumbersome cameras designed for use with the larger negatives necessary when all prints were made by contact. These cameras are inefficient when employed for present-day methods, and a new and improved design is badly needed. In an attempt to rectify this situation, in 1943 I drew up a specification for a new camera. Although this met with general approval, there seems little likelihood that it can be produced for some considerable time, due to manufacturing difficulties in this country.

When photographing children, one's retouching problems are minimized because the child's face is smoother and unlined, and skin blemishes are rare. For this reason, the majority of photographers nowadays employ a miniature camera or reflex taking 6 × 6 cm. negatives, and in many cases conceal the camera in a 'doll's house'. (I designed one myself some years ago which proved worth its weight in film, and this item of equipment was described and illustrated in my book on portraiture). There is some division of opinion as to whether it

is better to employ an assistant to handle the camera—the photographer making the actual exposures by means of a long shutter-release—so that he may devote his whole attention to amusing the child; or to do both jobs. Although it is more strenuous and exhausting, I have always preferred to adopt the latter course. It is hardly necessary to add that success in photographing children depends mainly upon an instinctive liking and understanding of these delightful (and sometimes exasperating!) subjects, and the ability to amuse them at all ages.

Lighting Arrangement for Studio Portraits of Adults

Ever since the early days of photographic portraiture, one of the chief difficulties has been the control of the light. Likeness is affected by many factors which come under this heading: the use of direct, diffused or reflected light; the angle at which light falls upon the face; the range of tones reproduced in the subject; the depth and shape of the shadows; and so on.

In portraiture by artificial light the following factors may be added: the type of illumination used; the colour of the light; the position and strength of various lamps; the design of the reflector used behind the light-source, etc.

The light in most general use today is the half-watt. But the apparent simplicity of the modern studio lighting system based upon this form of illumination is in itself a pitfall. It is not always realized that the balance and unification of the various lights is of supreme importance if the best results are to be obtained.

The most popular arrangement consists of a large trough-shaped reflector, usually containing four cupped lamps, which is suspended from the ceiling at some distance from, and immediately facing, the sitter. The main purpose of this unit is to provide an even flood of reflected light to ensure adequate shadow-detail in the negative at the basic exposure required for the film in general use. The modelling is then built up by the addition of a more powerful directional light used closer to the sitter — *thus working from shadows to highlights*. The latter light (usually called the 'main-light') is either mounted on a stand which can be raised or lowered, and moved in a radius round the sitter, or else is attached to a boom or counter-poised arm fixed to the ceiling.

This system enables the photographer to obtain and repeat certain lighting effects at will, and to produce negatives of consistently good technical quality. But even so, it has serious faults, not the least being lack of flexibility resulting in much stereotyped work. Unless the worker is careful, it is all too easy to lose 'lighting balance' by allowing the secondary reflected light to compete with the main-light, and thus to produce a general flattening, with loss of modelling and projection. When conscious of this shortcoming in his work, the inexperienced

photographer is often tempted to 'brighten things up' by the use of back-lighting with spot-lights instead of rectifying the real fault. He may thus fail to realize that the apparent improvement is superficial. The loss of modelling remains, and probably accounts for the unsatisfactory nature of the 'likeness' in the portraits, of which his clients complain.

In *Erith on Portraiture*, I have described and illustrated my own system of half-watt lighting, designed to give greater flexibility and control. This system is based upon a principle which I have always regarded as more sound than the arrangement previously described. In the alternative arrangement, the photographer starts with the main directional light as a basis. He then adds the appropriate amount of reflected light to the shadows in order to obtain the required amount of detail in these areas, and also to secure a 'balanced' lighting. This method of working has the advantage in enabling the photographer to see clearly at the outset the position of the main masses of tone (just as the artist commences his drawing of the head by blocking out the shape of the spaces occupied by the masses). He is thus able to place his main emphasis with certainty, afterwards building up the appropriate amount of shadow detail in relation to the tonal range required.

The system has the advantage of simplicity, being based upon three principal units only.

The first unit consists of a main-light attached to a counter-poised arm fixed to the ceiling. This arm has a wide range of movement, and is fitted with springs of the correct tension to counter-balance the weight of the lamp and reflector. They will remain in any desired position, and the height and angle of the light can be adjusted at a touch. The light is used direct, but in most cases diffused.

The second unit presents a departure from general practice. It consists of a secondary main-light introduced to give added flexibility and control. This light is also used direct, and in most cases diffused, and is moved with main-light No. 1 in a radius round the sitter, *so that the light from both lamps reaches the subject from approximately the same direction, although not necessarily from the same height.* The area of the reflector is slightly less than that of main-light No. 1, and the brightness of main-light No. 2 is controlled by means of a dimming resistance. The lamphouse is attached to a counter-poised arm mounted on a movable stand.

The third unit consists of a narrow, trough-shaped *vertical* reflector, also attached to a counter-poised arm mounted on a movable stand. The reflector contains a single cupped half-watt lamp, the strength of the light being controlled by means of a dimmer. This lamp is used to control the depth of the shadows. (*It should be noted that this system is designed for portraits in monochrome and*

**ARTIFICIAL LIGHTING SYSTEM FOR PORTRAITS IN MONOCHROME
OF THE ADULT SITTER (DESIGNED BY THE AUTHOR)**

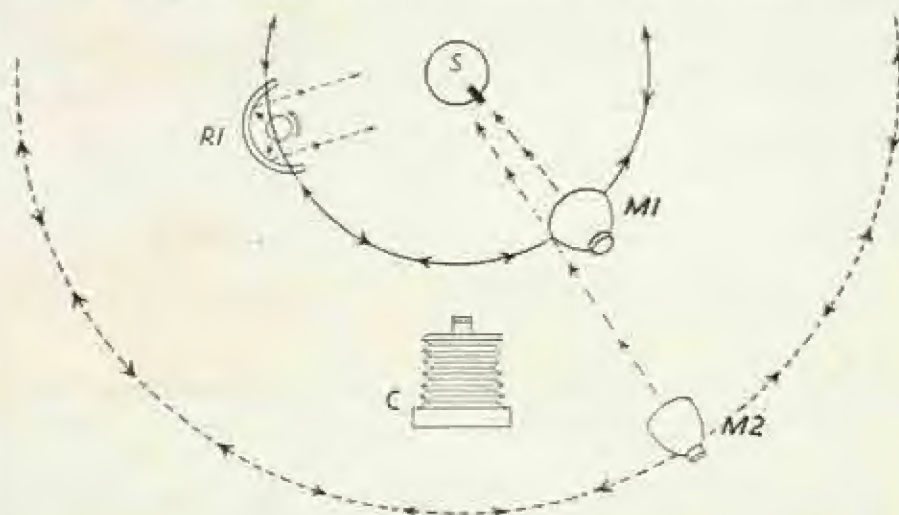


Fig. 1.

*S : Sitter. M1 : Main-light No. 1. M2 : Main-light No. 2.
R1 : Reflected light for controlling shadow depth. C : Camera.*

Method of use : Main-light No. 1 is used direct (in most cases diffused) and is placed much closer to the sitter than Main-light No. 2. It is preferably fitted to a counter-poised arm fixed to the ceiling, and can be adjusted for height and moved in a radius round the sitter. This light is used to put in the actual modelling.

Main-light No. 2 is also used direct but diffused, and is somewhat smaller in area than Main-light No. 1 and the brightness of the light is controlled by means of a dimming resistance. It is preferably fitted to a counter-poised arm attached to a stand with wheels, and can be adjusted for height and moved in a (larger) radius round the sitter. Both main-lights are normally used approximately in line, so that their light reaches the sitter from the same direction. The purpose of the second main-light is to give greater control, as described in the text.

Reflected light to control the depth of the shadow-side of the head is provided by a narrow trough-shaped reflector R1, the strength of the light being controlled by means of a dimming resistance. This light is preferably fitted to a counter-poised stand similar to that used with M.2.

All switches and dimmers are placed on one switch-board attached to the camera stand.

(Additional lights such as spot-lights, light for the hair and to control background-tone are also used, but are intentionally omitted from this diagram in order to make it as clear as possible.)



SIR GEORGE MADDEX, KBE. *Simple, well-balanced lighting with appropriate height and angle of camera give emphasis without exaggeration to characteristic features of sitter.*

not in colour, as the use of dimmers in the way described would, of course, affect the rendering of colour due to alterations in colour-temperature).

Accessory lights, such as spotlights, a separate light for the hair and one or more lamps to control background tone, are also necessary to make the system fully effective, as with the alternative system previously described. But even with the three basic lights only, a surprisingly wide variety of effects may be obtained with accuracy and repeated at will.

Control of Tonal Scale in the Lighting

One of the chief advantages of the well-designed artificial lighting system is that the photographer can control not only the quality and amount of light in regular use, but also the contrast and scale of tones in the lighting, according to the strength and quality of the various lights and their position in relation to each other and to the sitter. As an example, if we place a single undiffused spotlight above and to one side of the head of the sitter to give a '45 degree' lighting, the illuminated parts of the face will be extremely brightly lit. There will be a sharp transition from these areas to the hard-edged shadows, which will be almost empty of light. If we now substitute a diffused flood-light for the spotlight, the edges of the shadows will become softer and the modelling of the half-tones will show more gradation. But the shadows will still be very deep and lacking in detail. The addition of a greater proportion of frontal light from the same direction as the principal main-light (in my own system, provided by main-light No. 2) will improve the rendering of the half-tones, but will still leave the shadows on the far side of the head with insufficient light. The scale can be still further shortened by the use of reflected light directed to this area. By increasing the volume or intensity of the frontal light and/or by moving these lights nearer to the sitter and/or moving the principal main-light farther away, the scale will be still further shortened, until a position is reached when the shadows are only a shade darker than the half-tones, but without loss of modelling. (When used with a sitter wearing white or light-coloured clothes against a white background, this arrangement will give a true high-key lighting). If this increase of light to the shadows is carried to excess, a stage will finally be reached when the various sets of lights cancel each other out. There will be no distinction between the planes of the face, everything merging into a general flatness, as previously mentioned. (A similar effect is even more frequently due to the misuse of panchromatic material, and/or to over-exposure due to too much light. Care should be taken to diagnose the cause correctly when this fault is present).

In order to obtain prints of good technical quality, it is necessary to relate the opacity of the negatives to the tones present in the subject in such a way that a

similar ratio will be reproduced in the print. It is obvious that contrast can be controlled both in the arrangement of the lights in the studio and also in the development of the negative. If the subject presents a long range of tones, and development is unduly prolonged, the range of the negative is likely to exceed the capacity of the printing paper. The correct procedure in such a case would be to condense the scale of tones by curtailing development of the negative and/or using a printing paper of soft grade, in order to obtain satisfactory prints showing good modelling with detail in both highlights and shadows. Where the range of the lighting is short, obviously increased development and/or the use of printing paper of vigorous or contrasty grade is indicated, in order to increase the separation of the tones in the negative.

When considering this question, it will be evident that where portraits with a fairly stereotyped lighting are acceptable, the photographer can arrange the balance of his lighting once and for all. By using always the same amount of light, and keeping the various units at the same distance from the sitter, and in the same relationship to each other, he can standardize not only exposure, but also the contrast of the lighting and the degree of development of the negatives, in order to fit one grade of printing paper. In this way a reasonably high level of technical quality can be maintained; provided, of course, that the various stages of the processing are properly carried out.

Where the aim is to do creative portraiture, however, the photographer is advised to achieve the desired effect by building up the lighting according to his instinct and 'feeling' through observation of the subject, at the same time making allowance in his mind for the way in which his visual impression will be modified by the photographic process. In such cases, it will be evident that there will be considerable variation in the scale of tones of the lighting. Judgment is needed in order to compensate for such variations in a way which will ensure consistently good quality in the finished prints.

Where this applies, it is only possible to arrive by experiment at an arrangement of the various units of the lighting to give a suitable *average* brightness range. The photographer (in most cases in co-operation with his darkroom staff) must then rely upon judgment based upon experience to compensate for any departures from the average brightness range, or the value of the light falling upon the sitter, due to alteration in the position, number, quality or intensity of the various units normally employed in the lighting, which may call for variations in exposure, development of the negatives, or the use on occasion of a printing papers of different grades of contrast. The results achieved in the final prints will depend upon the skill and team-work of all concerned.

Limitations of Lighting Diagrams for Portrait Subjects

In recent years the majority of photographic text-books have included diagrams to provide a 'key' to the lighting arrangement employed in the subjects illustrated. The practice is extremely popular, and has much to recommend it, but I venture to offer a word of caution to the less-experienced, who are apt to over-estimate the practical value of the information given in this way.

The diagrams are of necessity simplified, usually small in size, and not drawn strictly to scale. The position of the various lamps as shown can therefore only be regarded as a very rough approximation. This is not of serious consequence when the accompanying illustrations are of objects of fairly simple shape, such as a suitcase, wireless set, or even a plaster cast of a human head in which the contours have been artificially flattened out into a series of clearly-defined planes. *But when the subject is characterized by subtle and irregular shapes and contours — as with the head of a living person — very small alterations in the height, angle and position of the main units, and particularly of the directional light (as also, the use of lamps of different wattage, reflectors of different design or diffusers of different material) can cause an appreciable alteration in the rendering, and may shift the emphasis from one feature to another.*

Even if it were possible for the student to photograph *the same sitter* shown in the illustration of a portrait subject, and to work in the studio in which the original photograph was taken, he could only hope to duplicate the lighting by placing the lamps somewhere near the positions shown in the diagram, and then moving them about individually, and adjusting height and angle, whilst comparing the effect with the original photograph, until the desired result had been achieved.

Assuming that an accurately-scaled diagram is produced, showing the exact position, height, angle, wattage, type of reflector and diffuser, size of studio, etc., it will not only be difficult to interpret, but even more serious, **IT WILL STILL ONLY APPLY TO THE ACTUAL SITTER SHOWN IN THE ORIGINAL PHOTOGRAPH.** If the identical arrangement is used for any other sitter (or in the case of the plaster cast, with *any* human subject) the lighting effect will not be the same, because the alteration in shape and proportion of the main features and general contours will 'take' the light in a different way.

The experienced worker can tell the approximate position and number of lights employed by examining the portrait and noting the position of the highlights, the shape and direction of shadows and the nature of the modelling. The main justification for the use of lighting diagrams is that they help the beginner to visualize the general 'set-up'. But it should be clearly understood that they cannot provide a short cut to the judgment which can only be acquired through long practice and experience.



BRIAN WILLIS. *Showing suitable lighting and treatment for child portraiture.*

Lighting Arrangement for Studio Portraits of Children

For photographs of children, the chief requirement is a well-balanced lighting system which will allow the child to move over a limited area without falling-off of the light or loss of modelling, and of sufficiently high actinic value to permit exposures of not less than $1/25$ th second, in order to be able to 'catch' fleeting expressions. Lighting of a suitable type may be provided in various ways. The system first described in this article is perfectly satisfactory for the children's studio. The use of fluorescent lighting in place of half-watt to provide an even flood of frontal light is becoming increasingly popular, and serves its purpose well, at the same time effecting a considerable saving in current consumption.

Viewpoint and Camera Angle

Comparatively few portrait photographers make proper use of the valuable control given by the choice of viewpoint and camera-angle. First of all, let us consider the influence of the focal length of the lens employed.

It is important to remember that satisfactory 'drawing' is not dependent upon the focal length of the lens, but upon the position of the camera in relation to the subject. If a series of photographs of a sitter are taken from the same viewpoint, using lenses of different focal-lengths, the sizes of the images will be different. But if the same section is enlarged from each, it will be found that the 'drawing' is identical. As a rough guide, it can be said that there is likely to be distortion if the camera is nearer than five feet to the sitter when a head-and-shoulder portrait is taken. Bearing this in mind, it is a simple matter to avoid any possibility of trouble in this respect. The focal length of the lens should be chosen to give an image of the required size from the required viewpoint. In deciding upon this, it should be borne in mind that it is a disadvantage for the photographer to have to work at too great a distance from the sitter. Therefore, too long a focal-length in relation to the size of negative should not be used. On the other hand, there are occasions when it is an advantage intentionally to produce *slight* distortion by the use of a lens of a focal-length which permits an image of the required size to be obtained from slightly too close to the sitter. A considerable disproportion between certain features may thus be minimized when this is considered advisable for complimentary reasons; or where deliberate distortion is needed for dramatic effect; or to elongate the full-length figure in order to obtain an impression of added height — a subterfuge frequently employed by Fashion photographers.

Next, let us consider the influence of the height and angle of the camera in relation to the head of the sitter. In order to illustrate the first point clearly and simply, we will assume that we are photographing a two-foot square drawn upon

a wall, and that fixed in the centre is a triangular piece of wood, as in the first sketch. If the camera is placed at a distance of about 5 ft. immediately in front of this, so that the lens is on a line with the triangular projection, it will be seen as illustrated in Figure 2(a). Now let us lower the camera two feet so that the lens is pointing upwards, and — assuming that the swing-back is not used — the lines of the square will converge from the base, and the triangular projection will be foreshortened, as in Figure 2(b). Finally, let us raise the camera so that

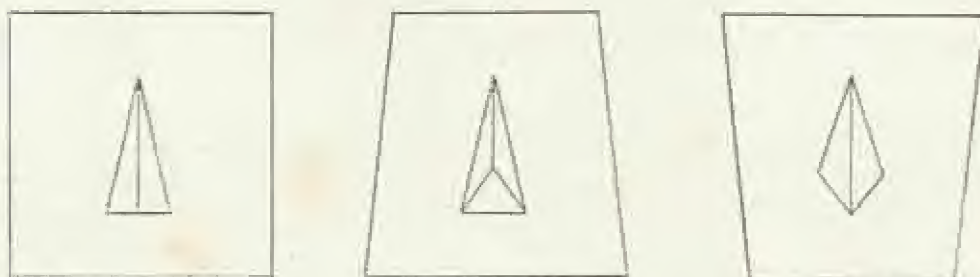


Fig. 2.

(a) *Level Viewpoint.*

(b) *Low Viewpoint.*

(c) *High Viewpoint.*

it is the same distance above the square, with the lens pointing downwards, and the lines of the square will converge from the top, and the triangular projection will be elongated, as Figure 2(c). It should not take too much imagination to relate the square to the human head, and the projection to the nose, and the inference should be obvious.

A low camera-position will give emphasis to the lower part of the head and will foreshorten the nose. A high camera-position will give emphasis to the top part of the head and will elongate the nose. (The use of too close a viewpoint will exaggerate the effect).

Now let us go a step further, and take the question of the angle of the camera in relation to the head of the sitter. We will assume that the person being photographed has a wide, angular jaw. If the head is square to the camera, we shall see the full width of this unbecoming feature. But if the head is gradually turned away — or the camera moved to left or right — we shall see the angle of the jaw on the far side gradually lessen until it disappears behind the line of the cheek. (If the lighting is now arranged so that the main-lights are well to the side, or slightly behind the head, the prominent angle of the jaw-bone nearest the camera will be in shadow. The depth of this shadow can be adjusted with the secondary reflected light so that the shape of the feature is still clearly seen — this being necessary in order to preserve likeness — but is not given undue prominence).

By the careful choice of camera-angle, a wide head can be made to look narrower, a large mouth smaller, a crooked nose straighter, and so on. Conversely, a narrow head can be made to appear wider, and defects such as a disproportionately small mouth, large or protruding ears, or eyes set too close together, can be minimized, to mention only a few examples. It is equally true, of course, that choice of the wrong angle can exaggerate defects, and thus produce an unintentional caricature of the subject.

It should now be clear that by combining all three things — arrangement of lighting, height and angle of camera in relation to the sitter, according to the shape of the head and the proportions of the various features — we have a very considerable measure of control over the final result. The real skill comes in when deciding upon the correct relationship between each of these factors when dealing with the endless variations to be found in the human face. The procedure is by no means always straightforward, as in many cases when emphasis has to be given to the required features, others which the photographer wishes to subdue will also be emphasized. Where this applies a very accurate balance is needed between lighting, camera-angle and viewpoint in order to achieve the desired result. Only constant practice and observation can bring success. Part of the training should be to start with conscious observation in order to achieve the experience necessary to form a sub-conscious reaction, by training the eye to 'see at a glance' what is significant.

In my book on portraiture, the application of the foregoing points is described and illustrated step-by-step in 48 photographs — each with a separate diagram showing not only the general 'set-up' of the lights, but also the height and angle of the camera — with sitters of different types. The linking of diagrams and illustrations with the text provides a clear and convincing demonstration, and I can only regret that space precludes the inclusion of a similar series of comparative photographs in this article.

'At-Home' Portraiture

Not all professional portraits are taken in the studio. In recent years a growing number of photographers have specialized in photographs taken in the homes of their clients, bringing with them portable lighting equipment to supplement daylight indoors. The problem of lighting under such conditions places restrictions upon the control which can be exercised in this way. For this reason, most 'At-home' photographers prefer to concentrate on portraits of children, and to avoid the 'close-up' as far as possible when photographing adults.

In considering the equipment needed for 'At-home' work, portability is obviously important. Most workers use two or three lamps of the Nitraphot or

Photoflood type, mounted on folding stands. One lamp is used fairly close to the sitter to supply the actual modelling, the second at a greater distance to give general illumination, and the third to give back-lighting when appropriate, or to illuminate the background independently. (If the ceiling is low, the second and third lamps can sometimes be arranged to throw a beam upwards, which is reflected back on to the sitter). This arrangement would make it possible to photograph by artificial light alone, but in practice it is usually found necessary to combine daylight with artificial light in order to show the sitter in the daylight setting of the home. In this case, care must be taken that the supplementary artificial lighting is used to blend with the daylight and not to conflict with it, or the effect will appear unnatural. Small portable reflectors are often useful. Some workers carry with them a small switchboard fitted with a series-parallel switch, a voltmeter to check mains-voltage, and two or three 5-amp. plugs to which leads of the separate lamps can be attached, connection to the mains being made by means of a heavy flex with interchangeable 5, 10 and 15-amp. plugs to fit the various types of light-socket likely to be found in different houses.

In addition, many workers employ synchro-flash on occasion. Very pleasing effects may sometimes be obtained by this means, when used correctly. The main drawbacks of synchro-flash are: (a) cost, since one, two or more bulbs have to be used for each exposure; and (b) difficulty of accurate control of the lighting for the adult sitter, since the exact effect of the lighting cannot be seen before the exposure is made (although it is possible to gain an approximate impression of the general effect by previously placing half-watt lamps in the position from which the flash will be made). There remains the fact that with mixed lighting the visual impression of the effect cannot be judged with certainty. The balance of the two sources does not remain constant; and, moreover, the actinic values of daylight and artificial light differ, so that errors of judgment are much more likely than when working with one or the other alone.

Retouching

The retouching of negatives was first introduced as a means of correcting the falsities introduced by the use of plates which were largely colour-blind, causing the pink flesh-tones to be recorded as an unpleasant grey mottle covering the face and neck of the sitter. As this mottle covered the whole of these areas, it was necessary to cover the whole skin in the negative reproduction with an even texture of pencil-strokes, later known as a 'stipple' or 'grain'. Unfortunately, in the process, it was inevitable that all the subtle lights and gradations of tone — which give character — were lost. Half-tones merged into shadows, so that the

face had something of the appearance of a wax mask, and lost all appearance of 'fleshiness'. To add to the evil, it became the general practice to obliterate small lines and greatly to soften all shadows. This was done more or less mechanically to every negative.

With the introduction of the orthochromatic emulsion, the false rendering of flesh-tones was largely overcome. But retouchers were used to the old 'stippling' methods, which continued to be the general practice. Early artificial lighting systems were to some degree responsible for this, as the colour of the light reintroduced a false rendering of colour on the plate, although of a different character.

The introduction of half-watt lighting, and finally the portrait panchromatic film and plate designed specially for use with this light, were responsible for a minor revolution in portrait work. (Earlier panchromatic plates were entirely unsuited to this purpose, for reasons which need not be given here. In consequence, their introduction had little influence on portraiture).

The modern panchromatic film or plate—being sensitive to red—gives a rendering of the flesh-tones which is largely free from the exaggerated 'blotchiness' given by earlier non-colour-sensitive plates, if used correctly. This being so, 'stippling' is unnecessary.

Moreover, in the old days practically all negatives were printed by contact, whereas nowadays 90 per cent. of portrait negatives are printed by projection from relatively small negatives. *This means that every pencil stroke of the retouching is enlarged also.* Where 'stippling' is used, the falsity of the tones and the unnatural smoothing-out of the modelling becomes more evident with every degree of enlargement. This fact alone should condemn the old method once and for all, as the results are false at a glance.

Although it would be pleasant to be able to do without retouching, it remains a necessity with the majority of portraits of adult sitters, for the following main reasons: (1) The strictly accurate factual record is seldom acceptable (a) because of psychological factors such as have already been mentioned; and (b) due to the presence of small flaws and irregularities of pigmentation and skin-texture in the complexion of the majority of subjects; or (in the case of women) to the occasional need to modify faulty make-up when present. In this connection, it is of interest to note that in real life the mind frequently fails to take note of *small* defects of this kind. It is, therefore, perfectly legitimate to correct them in the photograph without regarding such treatment as 'flattery', as the result will appear more 'natural' than when they are shown. (2) The need to correct slight faults such as are likely to occur at times even in the work of experienced photographers, due to the many complex problems to be considered. To give an example:

When photographing a nervous and restless sitter, it may be necessary to ignore such items as stray pieces of hair, or a wrinkled sleeve, in order that the photographer may concentrate upon obtaining natural expression. In such cases, it is usually inadvisable to draw the attention of the sitter to such matters, and to hold up proceedings whilst adjustment is made. The necessary corrections can best be effected by the retoucher in due course.

I have been privileged to sit upon the Qualifications Board of the Institute of British Photographers since the introduction of the Degrees of Fellowship and Associateship, and during this time have had the opportunity to examine the work of hundreds of portrait photographers. One of the most common and serious faults in the work submitted has been the faulty retouching of the negative. In great numbers of cases the modelling has been falsified, and the character and likeness of the sitter partly or completely lost, through excessive and ill-judged use of the retouching pencil and/or knife.

There are, I think, two main reasons for this state of affairs. First, the complete lack of any knowledge of facial anatomy by the majority of retouchers. (The omission of this most fundamental aspect of the work is as surprising as it is deplorable. It is good to know that the deficiency is being rectified in future training given at the schools of photography). Second, the fact that great numbers of retouchers are still using the old 'stippling' method, now completely obsolete.

In 1937 an article entitled *The New Retouching* appeared in the Institute of British Photographers' official publication *The Record*, and was later reproduced elsewhere in this country and abroad. This article described an improved method of negative retouching developed by myself and used at my studio for many years. The method has since been adopted by great numbers of retouchers.

The chief difference between the old method and the new is that whilst in the old the aim was to *cover* the whole of the skin with an even texture of pencil strokes, this 'mask' is quite unnecessary with the modern method, which may be roughly divided into two main stages:

The first stage consists of evening-up small skin blemishes, which show on the negative as lighter patches, by *shading* them in with a finely pointed hard lead — using a continuous, circular stroke, applied without pressure — until they match the surrounding tone. *The aim should be to fill in these patches evenly so that the individual pencil strokes do not show.* This is the most radical change from the old method, and should take only a few minutes.

The second stage consists of small structural or tonal alterations. These are modified on the negative by means of the same textureless shading with a hard or a *slightly* softer lead when they are small in area (such as lines and wrinkles which have been unduly accentuated by the lighting, or need to be subdued for

complimentary reasons) and washes by means of dyes when a larger area has to be lightened in tone. It should be noted that no important lines should be entirely removed or altered in shape, or likeness will suffer. The object is to fully preserve both the modelling and character which should be present if the subject has been correctly lighted, and the negative properly exposed and developed.

WHEN RETOUCHING NEGATIVES OF SMALL SIZE A MAGNIFIER SHOULD BE USED. Care should be taken that the retouching lead is sharpened to a very fine point, and a hard lead used throughout.

The removal of small dense portions of the negative — such as stray pieces of hair against a dark background — can be carried out by means of knife-work or chemical reducers of the Iodide type. Such work should, of course, be done before the application of the medium. When the size of the head on the negative is small, however, and the retoucher is not highly skilled in the use of the knife, it is best to carry out such modifications on the prints rather than the negative. This gives more work to the finisher, but bad knifework will cause far greater trouble.

The advantages of the modern method are:

1. It is far easier to learn than the 'stippling' technique.
2. Much less time is needed to retouch negatives.
3. Modelling is unaffected and likeness and expression fully preserved.
4. Negatives correctly retouched by this method will stand considerable enlargement without the necessity for excessive handwork to prints.
5. It is possible to successfully retouch relatively small negatives. There are, of course, limits to this, and generally speaking a head of about 1½ inches to 2 inches appears to be the minimum size if much handwork to prints is to be avoided. But this matter depends to a large extent on the type of lighting used. If the negative does not need to be enlarged more than three or four diameters, it is often possible to retouch a head as small as 1 inch when a fairly frontal lighting has been used and the negative is of good technical quality.

The procedure when retouching a film negative by the modern method is as follows:

1. Carry out knifework if needed.
2. Apply retouching medium to negative in the usual way.
3. Take a hard lead (sharpened to a fine point) and instead of starting on the forehead and working down the face — as with the old 'stippling' method —



Enlarged section of unretouched negative.



Actual size of negative ($2 \times 2\frac{1}{2}$) on which retouching test was carried out.

THE ERITH SYSTEM OF RETOUCHING FOR PORTRAIT NEGATIVES

The three sets of comparative negatives and prints used in the following pages are reproduced from a demonstration prepared for the Institute of British Photographers (originals are kept at 49 Gordon Square, W.C.1, for the benefit of portrait photographers, and may be inspected on application to the Secretary, A. F. Bucknall, MBE). In order to make the test a stringent one, the subject was photographed on non-colour-sensitive commercial film of small size, so that skin-texture, uneven pigmentation and small blemishes might be accentuated to a far greater degree than when working with panchromatic material. All negatives were projected through a condenser enlarger on to $6\frac{1}{2} \times 8\frac{1}{2}$ glossy bromide paper to emphasize the actual retouching.



UNRETOUCHED. *Enlarged Print from unretouched negative, showing section used for the retouching comparisons.*



OVER-RETOUCHED. Enlarged section from negative and positive print when deliberately over-retouched. Modelling is lost, likeness suffers, and the pencil-strokes can be clearly seen on the original print, although they may not be so obvious in the reproduction. The use of 'stippling' would have been even more unsatisfactory. (Time taken to retouch negative : 30 minutes).



ERITH METHOD. Enlarged section from negative and positive print, after retouching by Erith method (full print overleaf). Modelling and likeness have been fully preserved. In the original print, the actual retouching can only be seen on close examination, and would have been undetectable if printed on a paper with matt, semi-matt or grained surface. (Time taken to retouch negative : 10 minutes).



ERITH METHOD. *Enlarged print from negative retouched by Erith method.*

merely match up any small skin blemishes in shadows and half-tones, as described earlier.

4. Having done this, and still with a hard lead, slightly soften any lines which have become accentuated (using the same circular, pressureless stroke), being careful not to remove them completely or alter their shape. If the line is deep and has to be considerably lightened in tone, a slightly softer lead may be used. But as a general rule, it is best to keep to a hard lead — such as an H₄ — throughout. No attempt should be made to form a 'stipple', the aim being to fill in each small area to be lightened with an even, textureless tone as fine as possible so that the pencil strokes do not show. If the work shows as pencil strokes on the enlarged print, the method has been wrongly applied. Probably too soft a lead has been used, or the point of the lead has not been sharpened fine enough.

If for any reason it has been necessary to do much work to shadows and half-tones, as with a very bad complexion, it must be remembered that such work will make these areas a tone lighter. It may, therefore, be necessary to put a little extra lead on the highlights to restore balance.

5. Where very transparent portions of the negative have to be filled in — such as creases in the skin of the neck due to turning the head, or strands of untidy hair against a white background — this work is carried out with a grey dye, such as Martin's or Johnson's. These liquid dyes are much easier to match against the tone of the negative than Neo-coccine, and are, therefore, to be preferred when very transparent small portions have to be completely removed. The stock solution of dye is first of all diluted (the brush being dipped into the dye and water added on the palette). The necessary density is built up on the negative by a series of washes of weak dye applied to the appropriate area with the brush, each wash being allowed to dry before the next is applied. Care must be taken not to use the dye too strong, and any attempt to fill in the area with one wash of strong dye will almost certainly meet with failure. In the case of film, it is preferable to apply the dye to the gelatine rather than to the emulsion side of the negative.

6. When it is necessary to lighten a fairly large area of the negative, in the experience of the writer Neo-coccine is preferable to one of the grey dyes — in spite of the difficulty in judging the depth of the application, due to the red colour of the dye — as it flows on more easily and evenly. Only practice can give judgment of the correct depth of the wash needed to hold back the appropriate depth of tone, as the colour of the dye has to be taken into account. Occasionally the wash will turn a yellow colour for no apparent reason, which results in increased opacity. In view of this, great care needs to be taken to build up the strength of

the application gradually from several washes of weak dye. In practice, it is helpful to make up a stock solution containing 10 grains of Neo-coccine to 1 oz. of water, and from this to prepare additional bottles containing respectively 10, 20 and 40 drops of the stock solution to the ounce of water plus a drop of Wettol to each.

When applying the dye, the whole area to be lightened should be covered at one application, and any surplus solution immediately taken up with a small pledget of cotton-wool, moistened with water and squeezed almost dry, and wrapped round an orange stick held in the other hand.

The building-up of the dye does not take long, as each wash dries fairly quickly. The retoucher can proceed with other negatives in the meantime.

If by accident too much dye has been applied, the whole of the colour can be removed by re-washing the negative and gently swabbing it with a piece of wet cotton-wool; or when using the grey dye, by applying ammonia on a brush to the dry negative, and wiping off rapidly with a pad of moist cotton-wool.

With glass negatives, the dye must, of course, be applied *before* the application of the medium.

In conclusion, it needs to be stressed that the aim of the photographer should be to reduce the need for retouching to the minimum by seeing that the lighting in the studio is properly balanced and suited to each sitter, and that negatives are correctly exposed and developed to print without difficulty on one medium grade of printing paper. Any attempt to print from faulty negatives by using vigorous or contrasty grades of paper will double or treble the amount of retouching needed. It will not then be the fault of the retoucher, or the method, if the work shows when printed and calls for much handwork on prints. If *slight* diffusion is used in the lens of the camera — this should be just sufficient to obviate excessive skin-texture and no more — and the negatives are of good technical quality and printed on paper of medium grade, the average time needed to retouch a small head should be about ten minutes, and seldom more than fifteen minutes. Little handwork will be needed on the prints in the majority of cases.

Print Finishing

Print finishing may be divided into two main types:

1. 'Working-up' prints by manual methods, with a view to increasing their 'artistic' appeal.
2. Removal of small defects, such as spots, scratches, and so on, caused by accident or carelessness in processing.

At one time, photographers made extensive use of type 1, which included: (a) 'Control' processes, such as Bromoil. (b) Use of powdered graphite, chalk or pastel, applied with stumps or pledgets of cotton wool, and/or pencil or crayon. (c) 'Doping' of prints with a medium (usually containing Linseed Oil, Turpentine, and sometimes several other ingredients) followed by the application of oil-paint by means of the brush or cotton-wool. (d) Watercolour or dyes applied with brush or Aerograph.

Fortunately, such methods are rapidly becoming obsolete, the majority of present-day workers preferring to work within the range of their medium, and to obtain their results by purely photographic processes. Pictures produced by the combination of extensive handwork with photography are basically false, since the values are fundamentally different in each case. It is a sign of progress that this fact is now widely recognized by photographers.

In view of the foregoing, I do not propose to give working details for type 1, but will pass on to type 2.

The removal of spots or small scratches which print in a *darker* tone than the surrounding area should preferably be effected at the negative stage by means of retouching pencil or brush. But where the spots are too small to be successfully dealt with this way, the most simple expedient is probably to use a chemical reducer of the Iodide type previously mentioned, this time applied to the dry *print* by means of a brush, the print being subsequently re-fixed and washed to ensure permanence. With matt surface papers, however, dark spots may be more quickly erased from the print with a sharp retouching knife.

The removal of spots and scratches which print in a *lighter* tone than the surrounding area should preferably be effected on the *negative* by means of the retouching knife; or where the worker is unskilled in the use of this instrument, by local chemical reduction. Where the blemishes cannot be successfully treated in this manner, they can be eradicated at the positive stage by means of pigment applied with the brush.

Many beginners find 'spotting' prints extremely difficult, and are doubly exasperated because the operation appears extremely easy and straightforward to the expert. The explanation is that a certain 'knack' has to be acquired, which comes easily to some, but in other cases requires considerable practice to achieve.

The secret is, first, to take care in mixing the paint to ensure that it matches the colour of the image on the print; secondly, to use only first-quality brushes chosen by test to give a firm single point (the brush should not have too small a bristle, or it will need constant re-charging); thirdly, to charge the brush with a mixture of paint of the correct *strength* of pigment to match the surrounding area of the spot or spots to be taken out; and fourthly, to have just the right

amount of moisture on the brush — neither too wet nor too dry. Beginners are advised to dilute the pigment on the palette so that it is available in two or three strengths, and to work first with the weakest mixture on spots or scratches surrounded by a light area of tone, proceeding to tackle with a medium-strength mixture blemishes surrounded by a somewhat darker tone; and finally using a strong mixture to fill in spots surrounded by the darkest areas of tone. It is far better to have too weak a mixture on the brush than too strong, as in the former case one can always deepen the tone by additional applications; whereas in the latter, the too-dark spots will have to be completely removed before starting all over again.

Experts are divided as to the advantages of moistening the brush with water, on the one hand, or saliva, on the other. Personally, I belong to the anti-licking school, as the practice of sucking the brush seems somewhat unsanitary; and I find that plain water works perfectly as a medium, although some spotters consider the addition of a few drops of 'Wettol' makes application easier. The inexperienced may prefer to remove excess moisture from the charged brush by drawing it along a piece of fluffless blotting-paper before applying to the print, until judgment has been acquired.

By far the most difficult prints to spot successfully are those with a textured surface, as it will often be found that although the work appears undetectable when lit from one direction, it can be seen all too easily when the direction of the lighting is reversed. Generally speaking, the only satisfactory solution in such cases is to re-print on a different type of paper; but sometimes the work may be made less obvious by 'doping' the print after completion of the handwork.

The treatment of glossy-surfaced prints requires both practice and skill, as the addition of gum is needed in order that the spotting may not be easily detected. Only the minimum amount of pure gum should be used, and brushes must be thoroughly washed immediately after use, or they will soon be ruined. Indeed, it is advisable to keep certain brushes specially for this purpose, as also for the actual mixing of pigments. It is important to use relatively large brushes — such as size 5 — as there is naturally a tendency for bristles to become 'tacky' as the moisture is used up, and with small brushes there is temptation to continue working for too long before replenishing, with consequent danger of removing the pigment just applied.

As negative retouching is impracticable with 35 m.m. negatives, workers who use a miniature camera for portraiture are often faced with the necessity for fairly extensive retouching to prints, particularly when the model has been photographed without special make-up. This may not be a serious matter when



AT-HOME PORTRAIT. *The late Mrs. Cossey at the age of 92. Photograph taken by daylight only, with Reflex Kōrēlle camera, using 6 × 6 cm panchromatic film.*

only a single print is required, but can prove a sore trial when long runs are needed; so much so that it is often considered preferable to accept the loss of quality resulting from making a copy negative of the original worked-up enlargement, from which subsequent prints are produced. Another cause of trouble is due to faulty retouching, with consequent need to remove coarse pencil-strokes on the enlargement. The solution in the first case is to use a camera taking larger negatives; in the second, to improve technique by practising the methods already described.

I hesitate to recommend the use of dyes for print-finishing, even though they are particularly helpful when working on a glossy paper, as in my experience most of those made available to photographers in this country tend to fade or change colour when exposed to strong light for appreciable periods. Some workers claim to have been more fortunate in this respect, however, so it is open to individual workers to experiment and make tests if they are interested in the method.

Portraits in Colour

During the next few years, the availability of improved colour processes is likely to have a serious effect upon professional portraiture. The attraction of colour is widespread, and although it is unlikely that the colour photograph will ever completely replace work in monochrome, there seems little doubt that it will ultimately achieve a predominant position.

The work offered to the public is likely to be divided into two main types. First, the moderately-priced colour portrait produced by the multiple studios in which the processing will be carried out by the manufacturer. Second, the portrait selling at a high price, produced by the highly-skilled workers, in which the processing will be carried out by the photographer and/or his staff, thus being under control at every stage, and allowing greater scope for individual treatment and artistic expression.

In view of the comparatively low technical standards and the slipshod methods employed in many portrait businesses, the problem of changing to colour in such cases is not likely to be easy of solution. Deficiencies in this respect, coupled with shortage of adequate training facilities in this country, are likely to prove an even more serious problem to the profession in the future than in the past, and may well limit the number of portrait studios able to undertake the production of colour work of superior quality.

The technical aspect is dealt with in the contribution by W. J. Pilkington, and I will, therefore, only add the following two brief comments on certain problems particular to portraiture.

Disadvantage of Retouching by Make-up

The need to apply a special make-up to the face of each sitter is a drawback, as the practice has serious psychological disadvantages in many cases; particularly with the more homely middle-aged and elderly of either sex, who are unable to feel natural after the make-up has been applied, so that the portrait may be unsuccessful because of strained expression.

Critical Standards of Judgment

The portrait photograph is likely to be subject to far more stringent criticism upon the accuracy of colour values than subjects of a general nature. The reasons for this are again mainly associated with the 'human element'. I have space for only one example to illustrate the point, and have chosen this particular factor from the many bearing on the question, as I do not think it has been previously brought forward by writers on the subject.

Most women are highly sensitive to colour differences when selecting cosmetics, clothing and accessories; and so on. Because of this, they tend to focus the attention upon such items in a portrait photograph, and to apply the same standards of evaluation when assessing faithfulness of particular colours in the reproduction. Unfortunately, also, judgment is not infrequently biased by 'wishful thinking' when the subject is looking at her own likeness. A sitter whose dyed hair is neither natural nor becoming in shade—and furthermore, clashes with the colour of her dress—is likely to complain bitterly that the reproduction is false, even though the various colours are correctly rendered (as indicated at the beginning of this article). In such cases, the photographer can do comparatively little to make the portrait acceptable to the client.

I have dealt much more fully with this matter in my book on Pictorial photography (published by *Fountain Press*), but even the foregoing leaves no doubt that the change from monochrome to colour will intensify the already formidable problems associated with portrait work. On the credit side, the development will add greatly to the interest of this fascinating branch of photographic practice. The need to respond to the challenge will freshen the outlook of many whose work has become stereotyped, and also re-awaken the general public to the value of the service offered by the professional photographer.

Control in Commercial and Industrial Photography

BY WILLIAM PIGHTLING, AIBP, ARPS (DIRECTOR, STEWART BALE, LTD.)

THE apparatus, methods, and processes to be discussed in this chapter are those of a general practitioner in Commercial work, as distinct from specialists in the fields covered by other contributors; that is to say, of one whose daily work is the photography of modern architecture, machines, homes, and factories; 'of ships, and shoes, and sealing-wax; of cabbages, and kings.'

The Commercial Photographer

Whilst the Fashion artist, the Pictorialist, and the Portrait photographer strive in their own ways to express the charm and poetry of clothes, of nature, and of humanity, the Commercial worker has to keep both feet planted firmly on the ground. I picture him as having truth as his ideal; and his work will usually be austere representation. Not that this will demand a less critical standard of technique. On the contrary, being denied recourse to any artificiality of treatment, he will have all the more need to compose and light his subjects to their best advantage, to recognise and display their characteristic design and texture. The utilitarian nature of his work will not generally allow him to make use of those aids to glamour which are at the command of the unfettered pictorialist, — such as ruthless suppression of unwanted detail, dramatic spotlighting, differential focusing, and crazy angles. In fact he is more likely to class his work as craftsmanship rather than art, and the straight portion of the characteristic curve will be his spiritual home. He will require to have a sound knowledge of the principles of perspective and composition, a quick appreciation of the tonal range of the subject and of the practicability of modifying the

extremes of high-light and shadow; and he must have the ability to produce finished negatives which can be printed without elaborate retouching, masking, or 'faking'.

The Commercial Studio

In a well-run Commercial studio, the need and scope for variation from a standardized procedure in processing and printing is negligibly small. The operator's work, of course, is normally not finished until his plates are developed, as he alone knows of any reasons for departure from average time-and-temperature processing; but the element of magic has long been banished from the darkroom, and has been replaced by a tested routine which will ensure, if not absolute uniformity, at least a strong family likeness amongst the negatives. The subsequent happenings — spotting, blocking out, printing, finishing, and mounting, apart from casual directions, are matters depending more and more on mechanical skill under experienced supervision.

Control and Photographic Quality

Modern practice, in fact, sets the photographer as free as possible from any preoccupation with darkroom procedure, so that he may exercise his talents in their proper sphere — the building of the picture, firstly in his mind and then in actuality up to the measure of his power. The amount of control necessary in the retouching and printing room is an index of his failure either to visualize or to achieve his aim, and every scrap of such after-work brings some degradation of priceless photographic quality. The 'end-product' of this working-up process is the conventional catalogue illustration of tools or machinery in which every line and surface has been drawn or airbrushed to an impossible and artificial smoothness, leaving hardly any trace of the original photograph. Such a fully worked-up print of a machine is a repulsive thing to contemplate. It may serve a legitimate purpose, but a photographer's chief pride should be that his prints require the minimum of retouching or any sort of after-work to satisfy even the block-maker.

Quality can never be added to a negative, but it can be lost as readily as bloom on a peach — and by much the same means; — hand work. Every process which intervenes between the inception of a picture and the finished print should be designed to maintain intact this distinctive photographic quality, and any sort of modification of the negative should only be undertaken reluctantly in case of necessity, with the clear appreciation that any change is for the worse, and that 'even a perfect erasure is a sad blemish'.

It follows that the worker who adopts this view of his proper functions will not try to exercise a sort of diffuse control at every step of the work, but will be impelled to concentrate on the composition and lighting of his pictures and their backgrounds, and in so doing he will find need to cultivate the highest qualities of his vision, his imagination, and his skill.

The apparatus with which the work is to be done must be flexible, subservient, and capable of adaptation to all possible demands upon it. It goes without saying that the photographer will be thoroughly familiar with it all, if he is to use it to the best advantage, and will be as conscious of its limitations as of its good points. How far these limitations are unnecessary and self-imposed will largely depend on the unwise choice of the wrong kind of studio, cameras, and lighting equipment.

The Studio

It is unlikely that any available space will be too long or too wide for the comfortable grouping of the larger items of machinery and furniture which may have to be handled from time to time, but excessive height may be an expensive handicap in the fixing of backgrounds and flood lights; and excessive window-space or glass roofing, whilst it will give the photographer a valuable alternative lighting scheme, may result in indecision or loss of time in changing over from natural to artificial light, and will certainly cause a great deal of expense for the provision and proper maintenance of curtaining material.

Many modern homes contain some small room or alcove, smoothly painted, well lit, which would serve admirably as a setting for smaller articles; and the provision of some such domestic cosy corner within the studio, if it is practicable, will enable one to dispense with cumbersome backgrounds, reflectors, and 'props' to a surprising extent. Presumably, however, the matter of studio accommodation has already been settled, and the possibility of change or reconstruction is, in present circumstances, a purely academic question. It would still be wise to lose no opportunity of visiting other studios occasionally, if only to provoke one's imagination to the planning of the ideal, and to ensure that one has not become blind, through sheer familiarity, to some avoidable faults and limitations of one's own premises.

In any case, so much of an industrial worker's experience is gained 'on location' that he will learn to be much less dependent upon familiar surroundings than, say, the portrait photographer; and so long as he has adequate working space in premises which are reasonably clean, warm, and airy, he will not find that the physical aspects of his studio have any significant influence on his mind or his work.

The Camera

Here we come to debatable ground.

No one will deny the pre-eminent usefulness in its own sphere of one or other of the modern small reflex or miniature cameras, and no serious worker would be without one when circumstances indicate its peculiar value, but there can be no question whatever that a field camera with all the 'movements' is the only possible choice for the principal instrument. It is absurd to conclude that because the miniature has nowadays completely displaced the large folding pocket camera in popular amateur esteem, and is being professionally acclaimed for child photography in the studio and for certain types of press work, that it would be 'progressive' to adopt it for commercial use. The features which have had to be sacrificed in designing the miniature are of prime importance in commercial work, — rising and swing front, swing back, triple extension, and wide-angle movement. One or other of these movements may have been incorporated in some models of hand camera, such as a certain amount of rising front or wide-angle adaptation; but what the professional worker requires is the whole range of movements, and plenty of each.

An Important Control: Camera Movements

Care is necessary in the choice between even well-known types of camera to ensure that the rise on the front panel is enough to lift the lens centre up to the level of the top edge of the plate, and — equally important — allow almost as much drop when it is needed; and as this can only be done to an extreme degree by sloping the baseboard downwards and restoring the vertical position of the back, it may be found that the clearance between baseboard and back is insufficient to allow all the drop required. This is the same thing as saying that the swing back must have a generous arc of movement. It is also essential to be able to swing the back and the front about a vertical axis, that is, to push one side of the focusing screen nearer to the lens than the other, and to lock the sides in position independently. The hand-or-stand type of camera often has every customary movement except this, yet its absence is a serious handicap, because two useful controls are then sacrificed: (a) by setting the screen obliquely

LIGHTING COLUMN

Maximum rising-front was necessary to include the full height of this lighting column whilst maintaining its essential uprightness. Any attempt at a 'new angle' view would be merely frivolous. The 'Micro 5' screen was used to darken the sky so as to provide a perfectly inconspicuous foil to the brilliance of the lantern. (It also serves to conceal the falling off of the circle of illumination at the top corners).



across the baseboard to match the obliquity of the subject, the difference in apparent size of the near and far objects can be lessened, and (b) by setting the screen in the opposing direction, near and far objects can be brought into focus at a larger stop, though with some exaggeration of the perspective effect. An otherwise satisfactory camera may also fail to allow the front and back to be brought close enough together to accommodate a really short focus wide-angle lens, because the supporting struts interfere.

Since all these facilities are to be found together only in a 'field' camera, there can be no serious dispute about the matter, so far as type is concerned.

The Question of Size

The question of size, however, remains to be discussed. Many factors may be of importance on the score of economy, portability, and so on, but I am steadfastly in favour of the large print and the large plate.

Whether the ultimate purpose of the print is for publication or record purposes, the advantage clearly rests with prints of large size; and as contact printing is the simplest and quickest way of producing absolutely uniform prints, the first argument for large negatives is surely a very strong one.

Commercial photographs are among the necessities of everyday business life; they must have a scale and robustness in keeping with their surroundings,— catalogues, letters, specifications, blue prints and the like; they should be easily legible at — or beyond — normal reading distance, so that they may be properly seen by several persons at the same time, and not prove a hindrance to a general discussion by making it necessary to take turns with a reading glass. Convention has established the size of business letter-paper at 8 in. \times 10 in., and the reasons which justify this size are all valid against the reduction of the customary 10 in. \times 12 in. size of commercial photographs, though it must be admitted that few users of 10 in. \times 12 in. plates would be fanatically opposed to a standardization at 8 in. \times 10 in., providing that makers of cameras, lenses, and dark-room apparatus would co-operate willingly.

Composing the Picture

I imagine that to a portrait artist the camera is more or less a regrettable mechanical necessity which requires some distracting adjustment of level or focus whilst his attention is wholly centred on the sitter's expression and personality, and the interplay of light and shade. So long as his view-point is reasonably close to that of the lens, he is probably content with a cursory glance at the screen; but it is far otherwise with the industrial photographer, whose pictures are almost of necessity composed to the last detail upon the ground

glass. The one will have allowed himself a surplus of background for squaring-up and trimming, and will select just that portion of the negative which will give him a satisfactory marginal composition, whilst the other will instinctively fill the whole of his picture space from edge to edge and corner to corner, and will make not even a trivial re-arrangement of the subject without checking the effect on the focusing screen.

Control on the Focusing Screen

The chief advantage of the large camera is, of course, the facility with which the arrangement and composition of the picture can be observed and controlled on the screen. The most acute and experienced observer will often be completely at fault when envisaging the plane-surface projection of the three-dimensional object before him. A discrepancy of even an inch or so between the positions of the eye and the camera lens may make 'near misses' of what should have been 'hits'. And when architectural uprights or diagrammatic rectangles are in question, there is no better final check than the etched central and marginal lines on the screen,— if the size of the screen is big enough to make any slight departure from truth obvious to the unaided eye.

Levelling the Camera

The reference to true verticals will excuse a momentary digression. In spite of the sedulous lip-service paid to this first rule of architectural photography by teachers, text-book writers, and examination candidates, there is a deplorable carelessness in common practice. Levelling the camera need not be done with the painstaking accuracy of the land-surveyor, but it *cannot* be achieved by guess-work or instinct. Nor is it sufficient to make the back vertical when focusing one end of a panoramic view. A little experience will show that it is possible for really big errors to become apparent when the camera is rotated on the tripod top, if this has not been levelled independently to begin with. The essential safeguards are: — a generously broad tripod-top, and a spirit level which is unfailingly used four times on every picture,— on the baseboard, against the side of the camera, against the focusing screen, and against the lens panel. No-one who has omitted any item of this drill has made any honest effort to fulfil the law, and the resulting prints are an affront to good craftsmanship. When odd angles are justifiable, and the photographer aims at a novel or unusual viewpoint, the thing must be done with spirit and dash. Timidity is intolerable. By all means let the effect look like an earthquake — if that is the way it appeals to you; let the towers and buildings and men lean excitingly back on their heels, so long as they lean far enough to make it clear that the result was achieved



LOUNGE INTERIOR: *Selection, elimination and arrangement are the basis of composition. What is for the painter a mental exercise can be a stern physical task for the photographer. These two pictures were taken in the same room; the one above (at the insistent request of the furnishers) from the musician's gallery to show the lavish provision of comfortable seating accommodation; the other after several hours of hard work to capture something of the real intention of the designer. Most of the furniture is behind the camera. No reprints of the one above have ever been asked for.*



by design, and not by an accidental displacement of a tripod leg,— or habitual smug carelessness. To use a camera which is incapable of the adjustments necessary to maintain verticals, or having the equipment and failing to use it properly, is to resign the power of control at the very outset, and to become the slave instead of the master of one's tools.

Reverting to the main line of argument, I maintain that the picture is built on the focusing screen; and the larger the better, since no normal vision is acute enough to appreciate in detail the merits or the faults of a composition crowded into the area of a couple of postage stamps, or even a picture post-card.

Large or Small Camera?

The choice of a small camera for commercial studio work will also result in a crop of avoidable troubles owing to the cramping of the working space between lens and object. The conditions which govern the average working distance of the portrait camera from the sitter are equally valid here, though the perspective distortions due to using short focus lenses incorrectly are not so readily seen perhaps in glassware or china as in human faces. It should be normal practice to photograph even *still* life from a respectful distance. If a reasonable size of image is to be obtained at something more than arm's length, then the lens generally necessary will probably be between 10 in. and 14 in. in focal length, and the appropriate camera size will be at least whole-plate and more usually 10 in. \times 12 in.

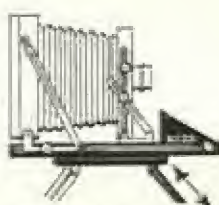
Some workers agree that large prints are more acceptable to the client than small ones, but rely upon the enlargement of small negatives as their method of production. They will claim that their prints are 'just as good' as contact prints, and one may allow that there is not much in it either way, with a modest degree of enlargement. But why squander skill and time and equipment to achieve results which are admittedly no *better* than the old standard? Especially when it means that instead of being able to watch the constructive effect of every alteration on the screen at full scale, it is necessary to wait for the finished enlargement to get a realistic view of the result. That may be a permissible technique for the amateur with just one picture to make, and all the amateur's enthusiasm for prolonged dark-room processes; but the professional worker, faced with an unending series of jobs, requires to deal faithfully with each one individually only in the creative stage. Working with a large camera, his work is practically finished when the plates are exposed; they can then go through the mill in groups, to be tank-developed, washed, and dried, in simple standardized conditions, and be made ready for contact printing with the minimum of spotting. The small camera technique is bad because it may conceal faults

"CAMERA DRILL"



1

ADJUST FRONT LEGS



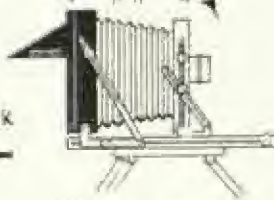
2

ADJUST REAR LEGS



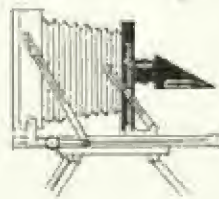
3

ADJUST-TILTING BACK



4

ADJUST TILTING FRONT



CAMERA DRILL: Set up the tripod with the points as nearly as possible in an equilateral triangle—one leg straight forward. Check each movement with a spirit-level.

- (1) True-up the baseboard 'fore and aft' by adjusting the length of the front leg.
- (2) True-up the side of the camera by adjusting the length of the rear legs.
- (3) True-up the focusing screen by adjusting the tilting back.
- (4) True-up the lens panel by adjusting the tilting front.

until it is too late to remedy them, and because the operator cannot properly appraise his work until it has been enlarged; by which time he has probably lost touch with the original idea, and will certainly be disinclined to start all over again for the sake of some trivial shortcoming which would have been obvious on a large screen.

The modern trend is to emphasize the importance of the creative stage, and to subordinate the merely technical and manipulative aspects, and it is unfortunate that shortage of material and rising costs have recently done so much to encourage 'second best' methods.

Lenses and Filters

The commercial photographer's optical equipment needs to be of good quality, but there have been no revolutionary changes in the past quarter of a century which have given him any striking advantages over the workers of an earlier day, though improvements are foreshadowed by recent experiments in glass manufacture.

So long as the photographer has a battery of lenses ranging from wide angle to long focus, all of standard English make, he has all the power he needs for selecting just so much of the subject as will fill the plate effectively at the outset, without the need to hold an inquest on the negatives afterwards to decide how much to mask off. When working in the studio, use will be made of the longest focal length which working space will permit, in order to obtain correct drawing; but to avoid unwieldy bellows extension when reproducing small objects to almost natural size, some compromise will be necessary. With flat objects such as paintings and some silverware, the work of dodging unwanted reflections is greatly simplified by choosing a rather long focal length, as the angles of reflection are obviously narrowed very considerably. It thus becomes possible to photograph an inscribed silver tray, by the use of the rising front, without including the camera reflection amongst the signatures.

Tone Control by Filters

If panchromatic negative material is normally used for the greater part of the daily work, then colour filters will have an important part to play in tone-control.

The added contrast obtainable with the 'Micro 5' filter on flatly-lit exterior views will often be acceptable, and, of course, the use of the same filter to emphasize the grain of furniture, where this is thought desirable, is common practice. When the 'Micro 5' is used in brilliant weather to darken a blue sky and exaggerate the cloud pattern, one must be very sure that this power to falsify nature is not being wantonly misused, but is serving a valid artistic purpose.

It is certainly permissible in the case of a building fresh from the architect's hands, and newly transformed from the drawing-board (if I may use the phrase in this connection) to concrete existence. Many architectural conceptions may be hardly worth recording if their outline is vague against grey cloud, but they may possess a beauty of line or texture which will only be revealed by contrast with the dark of an over-corrected sky. The habitual use of this filter, now that its once novel effects have become commonplace, should be avoided. Flamboyant skies are not typical of our country, and they ought not to be superimposed on normal subjects without the warrant of artistic necessity.

'Printing-In' Problems

The addition of clouds by 'printing-in' is a rather distasteful subterfuge. It wastes both time and paper. If at times it is deemed really necessary, then the operator must still hold himself (and not the printer) responsible for the finished result; he alone must select and position the cloud negative to harmonize with the view. A careful record must also be made of the ingredients of the mixture, in case of re-orders. Published methods which depend on the making of a duplicate negative from combined transparencies of the view and a suitable cloud, are admirable from many points of view, but will never appeal to the worker who has a trained appreciation of negative quality. No copy negative ever approaches the smooth gradation and texture of an original. The first noticeable loss is the near-stereoscopic effect due to the subtle difference in the surface-rendering of objects at varying distances, as recorded on a reasonably big plate of fine grain. If it is objected that the difference can hardly be seen in enlargements from small negatives, then so much the worse for small negatives! No one habitually using large plates is deceived by a copy negative, no matter how carefully made.

Filters

The wide range of colour filters now available includes many which have specific scientific uses, but the ordinary worker should not be without a set, adaptable to all his usual lenses, which will give him the power to accent selected colour values at will. It is wise, however, to look at the subject through an additional 'panchromatic vision' filter if the effect of the colour filter is being judged by inspection, as the plate does not by any means 'see' things as they appear to the unsophisticated eye. Viewed through the 'P.V.' filter plus the selected colour filter, the subject is resolved into a range of almost neutral tones, and this simplification will be most helpful.



Polarizing filters are occasionally very useful, both in the studio and out of doors, in controlling unwanted reflections. To get the best service from them it is necessary to have a grasp of the theory, and not to expect the impossible. They are usable in conjunction with any of the colour filters, increasing the exposure by about four times. A typical instance of this dual use occurred in the photographing of a north-facing house in wet weather, where the 'Micro 5' was used to provide contrast between brick and stonework, but the the pola screen was also found necessary to diminish the glare from the roofing slates. (The resultant exposure was, of course, sixteen times the normal,— the filter factors being multiplied, not added.) The provision of polarizing screens on the studio lights extends the useful applications of this principle, but it would be wise to make a close study of the special literature before installing a refinement which might seldom be required. Roughly speaking, the function of the simple pola screen used on the lens is to tone down very oblique reflections on glass, water, ceramics, leather, paint, and other non-metallic surfaces without affecting the colour rendering. The more direct the reflection, the less control is given by the screen, and when the camera is 'straight on' to the reflection it becomes quite useless.

A useful set of filters will comprise the following :—Tricolour Red, Green and Blue; Wratten K1, K2, K3 (or Ilford Alpha, Beta, Gamma), Ilford Micro 5, and P.V. and the Kodak "Pola" screen. These are the basic requirements, and should be bought cemented in "B" glass of a size and fitting to suit any of the standard lenses. Additional items will be added as experience dictates, and a good range of 2-inch square gelatine filters can be had at a modest cost.

Lighting Equipment

The choice of studio lighting equipment presents only the difficulty of selecting the best from amongst the very good. It would be almost impossible to have too much light, since a very high level of general illumination will compensate for the small apertures necessary to secure depth of field, and keep exposures within reasonable bounds. It must be possible to control the whole gamut of illumination, from the almost shadowless lighting which is so often called for (to obviate blocking-out) to the sharply focused 'spot' which can be so effective and dramatic in experienced hands.

STAIRCASE

One lamp, rightly positioned, may be made to contribute a shadow pattern which will gracefully elaborate a very simple design. Flat all-over lighting would cancel out the tonal variations that give some depth to this view, and a wrongly placed 'spot' might give disturbing and grotesque shadows.

Good composition and good lighting go hand in hand in the making of outstanding commercial pictures. They are quite inseparable, since composition is not merely the arrangement of solid physical shapes in pleasing patterns, but the orderly disposal of light and dark masses irrespective of whether they represent substance or shadow. The lighting of the subject may be the only thing left to the photographer's skilled discretion, the form and content and even the arrangement having been dictated by the client. This, however, will spur the ambitious worker to produce individual and distinctive results by clever lighting. In studio work this will mean a lighting technique that will do full justice to surface and texture, with truth again, and not exaggeration, as the criterion. The infinite varieties of surface present in everyday objects are not all to be faithfully recorded by any one formula of lamp arrangement, certainly not by the invariable use of a strong spotlight from one side.

Lighting Diagrams

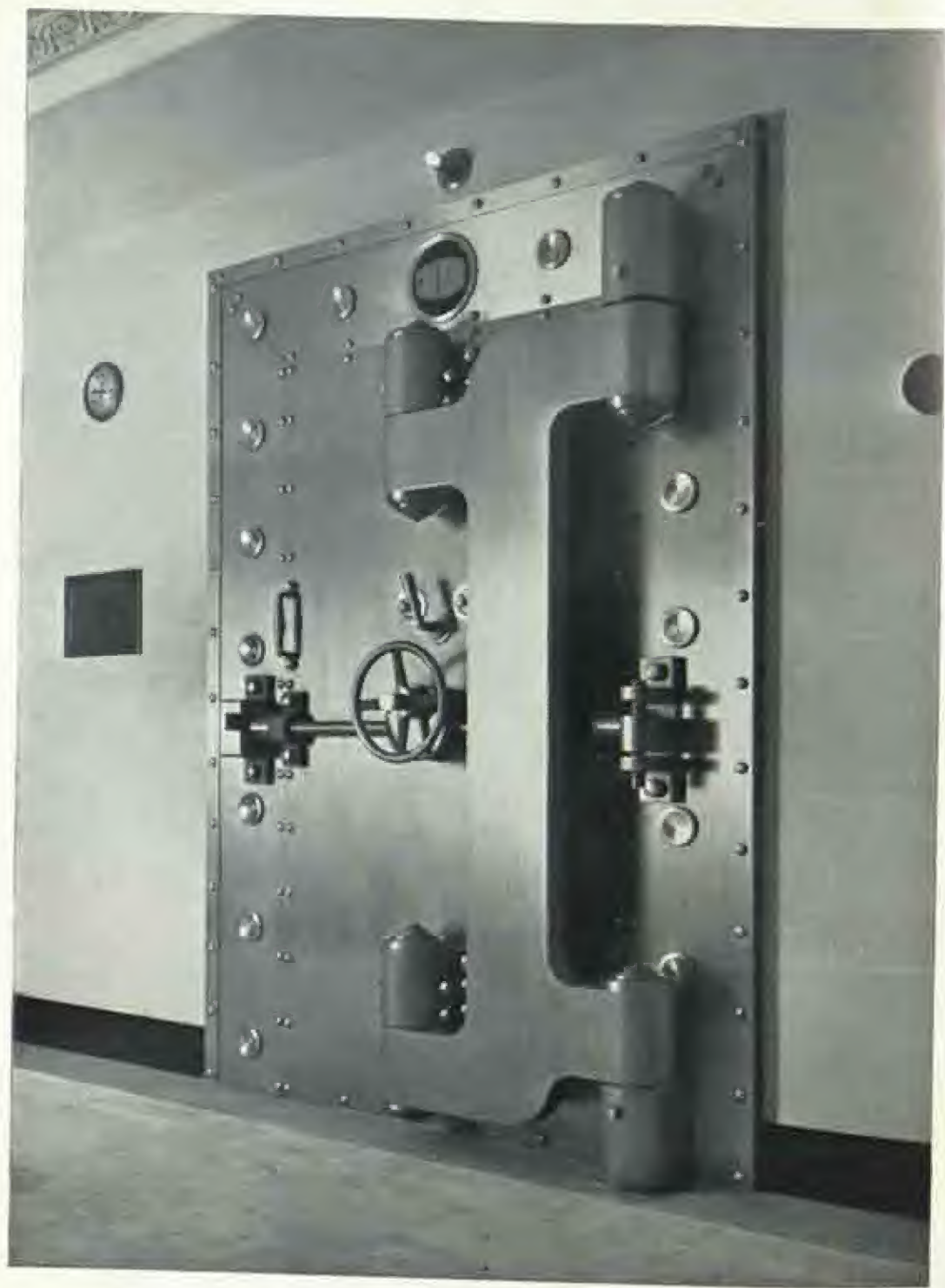
Personally I have never been able to judge from a printed diagram whether the lighting scheme recommended for specified subjects would in fact be even passably good when put into actual practice. I suppose that when approaching the kind of job that has been done a hundred times before, one naturally remembers that certain main units of light will have their more or less accustomed places; but by the time the plate is ready for exposure the little differences that make this job distinct from all the others will have resulted in quite big departures from any text-book norm. No diagram will be a passable substitute for actual experimentation, for the chief thing to be remembered is not the position of any light, but its purpose. If the diagram is detailed enough as to power, height, distance, and direction of beam, it defeats its own object as a simple guide, and becomes a source of bewilderment.

One remembers in this connection a diagram showing nineteen separate units totalling 68½ Kilowatts used in photographing a royal group. The only precise use I can see for this diagram, is for the operator concerned to file it as an *aide-memoire* in case an exactly similar function should occur some day in exactly the same place. Diagrams generally err, however, on the side of oversimplification, and do little more than define the author's intentions; they are not by any means infallible recipes for success. Like the conventional opening gambits in chess, they are simple preludes to infinitely complicated play.

MACHINERY

Straight print from blocked-out but unretouched negative. The machine has been carefully groomed for photography. Lighting: partly daylight, partly one moving lamp, plus white paper reflectors.





Portable Lighting Units

Portable lighting for use away from the studio varies in bulk and in power according to the operator's resources and methods. It is rather incongruous to carry a van load of assorted 'floods' and 'spots' to an assignment in the average small factory or house, where it might well be found impossible to provide enough current to operate half of them; though there will be occasions when a high level of artificial illumination must be established to allow very short exposures of moving machines or personnel, or for colour photography. Apart from these special cases, the essential amount of portable lighting is in practice surprisingly small. Modern factories, shops, offices, and houses are incomparably better lit than those of yesterday, as regards both daylight and artificial light; and modern plates are near-miracles of speed and latitude. A set of three 500-watt 'floods' in bowl-shaped or parabolic reflectors will provide all the general supplementary lighting required in the majority of cases, and the addition of one focusing 'spot' of even modest power-rating will give that measure of control necessary for emphasis on the principal point of interest.

It will, of course, be used for a time proportionate to the effect desired. Whilst high-brow theorists (to whom no disrespect is intended) are much concerned about failures of the 'reciprocity law', practical workers can happily rely upon the knowledge that the power of their supplementary lighting can be doubled, trebled, or raised to the n th degree by a simple corresponding increase in the time of exposure, providing that all other light sources are under full control. Instead, therefore, of carrying the maximum number of heavy lamps likely to be needed to illuminate the various planes of a subject appropriately, the same effect can be achieved by the minimum of 'portables' used for longer or shorter periods.

Painting with Light

The extreme case of this economy of means is that of the architectural interior worker who 'paints' his view with a single lamp. It is, of course, quite wrong to suppose that painting in this sense is equivalent to crude whitewashing. It demands the utmost concentration and agility; obedience to all the laws of reflection; 'inverse square' and the rest; a clear conception of the desired

STEEL DOOR

This strong-room door is situated in a basement passage hardly more than six feet wide, and the problem of effective lighting was solved by turning a portable light to face on to the wall behind and to one side of the camera, so that the door was lit all over by the scattered light, with a central 'spot' effect merely due to the gloss on the freshly painted walls.

result, and a background memory of previous successes — or failures. It is not a recommended technique for a practising industrial worker, who will obviously simplify his problem by setting up the available floods to give the best general illumination, and will then modify the effect of this arrangement by giving additional exposure with perhaps a single lamp carried closer to the important part of the subject, or by directing the spotlight upon it.

When any part of the total exposure is dependent upon lamps carried into the picture area, it is necessary to see that these lamps are completely free from even the smallest leaks when seen from the back. A missing rivet or an unscreened ventilation hole may produce a tangled skein of lines which will be difficult to knife out on the negative. The flex leading to these lamps will normally lie on the floor, and unless it can be neatly and inconspicuously arranged or camouflaged, it will have to be kept moving by the operator behind the camera, or by a second assistant. The operator's whole attention needs to be concentrated on the effect being built up by the moving light, and he must rely on quick and intelligent response by the lamp-bearer to a running commentary of orders, unless a precise drill has been evolved through long practice together. The lens stop should be small enough to allow time for unhurried movement, and the lens cap must be instantly ready to interrupt the exposure if the light is not being used according to plan, or if some unexpectedly bright reflection has to be killed. Of course, if the interruptions are frequent, it becomes very difficult to have any certainty about the total result (and there is the added risk of camera movement to be guarded against), so that if uniform negatives are to be produced there must be good team work and expert direction.

Processing

After the negative has been exposed, all the necessary work on it should be subject to stream-lined routine. Tank development will be the normal treatment, and it is, of course, the only way of handling any considerable number of plates in quick time. The almost universal adoption of tank development has been a major victory for plain common sense, and there is now a general acceptance of the conclusion that this simple chemical process is best conducted with orderly precision, and without any tinkering, no matter how well-intentioned. Uniformity of contrast and density are the first blessings of this standardized treatment, resulting in a valuable saving of time and paper in the printing room. Whatever kind of plates or films may be in use, the operator should not take conscious advantage of their latitude and become careless about the need for 'correct' exposure. Everyone knows that extreme care is necessary



EMPIRE EXHIBITION, GLASGOW. Architecture which is deliberately experimental and ephemeral is fair game for all the modern photographic stunts. A sense of humour is occasionally a relief from a strict sense of proportion. When the architect pipes, the photographer need not be too sober to dance !

in judging the exposure for colour transparencies, and if the same amount of thought is painstakingly applied as a matter of course to everyday black-and-white work, even though it is not strictly necessary, the result will be to increase the proportion of negatives which will match each other after development in standard conditions.

Control by Developer

For subjects off the beaten track, individual treatment will still be required, and perhaps some fetish which is a re-incarnation of old dark-room magic will seem temptingly desirable. Specific problems, however, can still be solved in a routine manner, if they are logically prepared for; as for instance by the provision of a special R.A.F. pyro-metol developer for known gross under-exposures; a contrast developer for unduly flat subjects and for black-and-white copies; and a 'compensating' fine-grain developer for exceptionally long-scale subjects where it has not been possible to minimize the contrasts during exposure. Each of these should bear a label with the appropriate directions as to time and temperature, and should be used as confidently as the standard tank when the need arises. Each of them will make a definite and measurable improvement in the required direction, and nothing more will be gained by the most inspired tinkering.

Intensification and Reduction

These processes play a much smaller part in negative production than was the case some years ago. Faster negative material has reduced the number of under-exposed plates which only a good dose of uranium would bring up to printing strength, and the proportion of negatives requiring any considerable intensification should hardly be more than one or two in a hundred. Mercury bi-chloride followed by ammonia gives a generous amount of extra density. It is quick and clean as a rule, though odd stains may appear if the negative is handled with fingers contaminated by soiled brass water-taps or metal tanks. A transverse line of stain has been proved to be due to negatives standing on edge only partly submerged in the washing tank for a minute or so before bleaching, the stain becoming prominent exactly at the water level when darkening was complete.

As a reducer, ferricyanide applied all over may sometimes be a regrettable necessity when big enlargements have to be made from dense plates, to save precious hours of printing time; but selective partial reduction for softening high-lights is frightfully risky and unwise. Even on a large plate there is little hope of keeping the action strictly within bounds, and with small ones the thing is quite impossible.

FORMULA FOR R A F PYRO-METOL 'OPTIONAL STAIN' DEVELOPER

(A) Metol	140 grains
Potass. Metabisulphite	160 "
Pyro	160 "
Pot. Bromide	60 "
Water to	80 ozs.
(B) Sod. Carbonate (Cryst.)	9 "
Water to	80 "
(C) Sod. Sulphite (Cryst.)	8 "
Water to	80 "

For 'stain' development, use equal parts of A and B.

For normal development, use equal parts of A, B and C.

CONTRAST DEVELOPER FOR PROCESS PLATES

(A) Sod. Bisulphite	2 ozs.
Hydroquinone	2 "
Pot. Bromide	2 "
Water to	80 "
(B) Caustic Soda	3½ "
Water to	80 "

Develop for about 2 min. at 65° F.

FINE GRAIN 'COMPENSATING' DEVELOPER

Use Kodak D K 20 formula, which gives some density-depression at the upper shoulder of the characteristic curve.

INTENSIFICATION WITH MERCURY

After thorough washing, bleach in

Mercury Bichloride	1 oz.
Water to	20 "

The bichloride should be dissolved in hot water, and then cooled. The solution may be used over and over again till it becomes cloudy. Wash carefully for five minutes, and darken in

Ammonia—880	1 oz.
Water to	20 "

Be careful to immerse the plate smoothly and rock vigorously both ways. Wash for one minute and put to dry.

When a studio subject has been brightly illuminated with a single spot-light, this reducer may usefully be employed around the dark margins to clean out stray unwanted detail, and once in a while it may be practicable to imitate the same effect by carefully reducing the edges of a straightforward negative, working gradually inwards to a circle or oval. This, I think, is only permissible if the actual use of a 'spot' would upser the correct lighting for the subject or introduce ungainly shadows. There is also the case where the subject might look very well when so lit, but a curve or a step in the background makes it impossible to obtain a shapely projection of the spot-light, and the effect must be corrected in this roundabout way.

Nothing need be said about washing and drying, except that plain water is still highly regarded as a hypo eliminator, and that drying should be smooth, continuous, and unhurried. A sharp change in the drying rate will result in sharply defined patches of greater density, or a crop of dark raindrop shapes, and the negative will be ruined. A very prolonged soaking and re-drying may improve matters a little, but as this is the sort of accident that only happens to negatives wanted in a hurry, one is unlikely to have time to spare for the cure, and should concentrate on prevention.

When the dried negatives come up for inspection on the retouching desk, they should require nothing but superficial attention, unless, of course, they are due for blocking out, or masking in some way for special purposes.

The Retouching Desk

The desk itself should be very firm and safe, with a rotating carrier, and not one that requires bodily removal to change from horizontal to upright. The rotating part should, however, be built out from the level of the desk, and have a perfectly square outer edge, so that a small adjustable T-square can be used against it to facilitate the drawing of masking lines exactly parallel with either the negative edge or any other vertical or horizontal datum line. The rule is laid against the horizon, for instance, in a marine view which is not quite true on the plate; the locking-nut is tightened, and the rule is slid first downwards to include the proper foreground and then upwards to mark the height of the sky. Transferring it to the other edge of the carrier, the right and left limits can be quickly marked in the same way with ruling pen and opaque, and the whole operation is finished in a very few minutes with ease and accuracy.

Light for Retouching

The light in the desk must be a good match for the light that will be used for printing. If the diffusing arrangements and the colour bear no relation to the



A is a perfectly squared piece of multi-ply wood, with a rebated aperture for the negatives. B.B are segments of a circle cut from $\frac{1}{4}$ " wood, glued and screwed to the back of frame A, engaging in a circular aperture in C the main sloping front of the retouching desk.

A will rotate safely and freely on C (with the help of a smear of candle wax when new).

D is an adjustable T-square—a celluloid rule thumb-screwed to a block which will lie snugly against any edge of the rotating frame. To mask a negative, a fine knife-scratch is drawn at the required distance from the edge of the negative and a moistened lantern-slide binding strip can then be laid down with extreme accuracy.

E is a strip of sponge rubber, comforting to the elbows during a long session, and a safeguard should a negative slip from the rebate.

printing light, there will be an equal lack of correspondence between the work as seen on the negative, and as seen on the finished print. It is well worth while to take a lot of pains to check this, and once the correct adjustment has been found, it should be carefully maintained by attention to the cleanliness of lamps, reflectors, and diffusing screen; and the spotting medium must be daily mixed to the right blue-black or neutral tint that will just obliterate any spots or air-bell markings, and will not convert them into an exactly equal crop of white spots for the print-finisher to waste time over. Inexpert spotting is always far too dense and lavish. The spots most noticeable on a print are white ones, and a touch of the knife would have removed the cause of them at the origin. Much more 'spotting' ought to be done with the knife than with the brush. Every unnecessary spot put on a negative is obviously multiplied by the number of prints taken from it, so that ten minutes hit-or-miss carelessness at this stage may result in hours of exasperating work on the prints before they are fit to deliver.

Knifing Technique

Fine scratches due to abrasion with grit between unprotected negatives roughly handled cannot be spotted out unless the edges of the furrows have been knifed away. The knife must, of course, be exceedingly sharp, and should be firm rather than flexible,— that is, of the familiar scalpel type. Thin knives will tend to squeak and chatter on the surface. The squeak is a musical note (not aesthetically perhaps!) due to an ascertainable period of vibration; and this vibration is generated by the series of microscopic ripples which the cutting edge is making on the gelatine surface, so the visual effect must necessarily be lacking in smoothness. Firm and really sharp knives will work with a slight hiss, reminiscent on a tiny scale of the sound of a carpenter's plane. Knife work should never be 'cross-hatched', and the needed effect must be got by patient work all in one direction, as it is much more likely to escape notice in this way. Patches of reflection on polished panelling are a frequent blemish, and they are not very difficult to eliminate if the knife always follows the grain of the wood. Excessive density in parts of stained glass windows can be much more accurately toned down with the knife than by rubbing down with abrasive. The worst drawback with some modern plates and films is the presence of a supercoating of plain gelatine which has to be removed most carefully before the real image is reached. A plate which has been reduced in ferricyanide offers the same difficulty. The first cuts with the knife remove substantial shavings from the surface without making any difference to the density, as the silver has been chemically removed from the upper layers, and the danger is that the



LAUNCHING CRADLE. *The launching cradle of this modern liner carries the weight and maintains the balance of the vessel during its brief journey down the slip-ways. (Its active life is perhaps half a minute). Overshadowed by the hull, its mass and design can only be seen to advantage when the sun's angle is favourable.*

very next cut may take far more effect than was intended. The rubbing down process has the same pitfall, and the whole area must be very patiently treated to remove this clear gelatine layer as equally as possible before the effective part of the process is seen to begin.

Blocking Out

Blocking out is one of the tedious jobs that few people really enjoy, but it must be done occasionally, and it can be done well, without being too laborious, if the conditions are right. The retouching desk should have ample and well diffused lighting; the negative carrier for even the largest plates must be capable of full rotation; and there should be means for supporting a large reading-glass at a proper distance in front of the negative. Eye-strain in normal persons will not be a bugbear if the magnifier is large enough to allow both eyes to come into play, and if it is perfectly steady,—not held in the hand. It is possible—with the concurrence of an optician—to obtain a pair of spectacles combining reasonably high magnifying power with a simple converging prismatic effect, and this can be a most comfortable arrangement. It should be adopted, however, only after competent advice, and it will be unsuitable if the retoucher's eyes are astigmatic or otherwise abnormal. These special lenses can, of course, be slipped on to those already worn, but they are thick and rather heavy, and may be a source of discomfort after an hour or two.

The actual work of 'lining-in' is best done with a ruling pen against the edge of a bevelled celluloid rule. The bevel is used, of course, on the underside of the rule, to give a safe clearance between the negative and the drawing edge, which may have become soiled with opaque. The pen must be kept in good trim, with nicely rounded and sharpened blades, and the blocking-out medium must be a little thinner than for brushwork. It is fed to the pen by a small brush drawn between the blades, and care must be taken to keep the outer surfaces of the blades clean and dry, otherwise the medium may run on to the edge of the rule and make a disastrous blot on the negative. A small family of 'french curves' will also be necessary, but especial care must be taken when using them, as the edges are not bevelled, and blots are much more liable to occur if the pen is over-full. There is a swivelling pen for those who can master it, which will help with the outlining of the smallest curves. The commonest fault with inexpert blocking-out is the over-running of lines at a junction, and as this is very difficult to correct by the usual means—a clean wet brush—the sharp retouching knife may be used when the negative is fully dry. The knife is used to cut right down through the photopake at the correct point, and the surplus is then gently scraped away; but if the film beneath the paint

is at all damp, this treatment will do serious damage. Care must also be taken when brush-work errors are being wiped off quickly with a small damp swab, if the negative has become warm in the desk, as some plates will not tolerate this treatment, and the swab will wipe out the image as well as the paint.

Complete blocking-out leaves the subject suspended in a white void which destroys all sense of scale, and it is frequently preferable to retain the flooring or foreground below a car or machine. Some 'ghosting' of this part of the negative is then necessary, and this can be effected with the air-brush. The bed-plate of the machine or any part of the subject which is to print at full strength is covered with transparent adhesive tape or 'varnish-paper', and the outline is delicately scored with the knife-point so that the surplus can be peeled off those portions where the air-brushing is to be applied. The spray must be as fine as possible and retouching dye may be found the best medium, but it must be built up very gradually, avoiding the risk of making really wet patches which may mottle; and, of course, the protective cellophane or paper must not be removed until the work is perfectly dry. Meticulous care is necessary in using either pencil or brush on top of air-brush work. Pencilling may scratch through the work if a hard point is used, and on the other hand, the work will look very gritty if done with a soft pencil, as with some air-brush colours the surface is not unlike a fine grade of sandpaper in its 'tooth'. Brushwork may be preferred and will generally be safe enough if care is taken to have the brush even a little drier than usual.

Negatives having large areas of air-brush retouching have a very delicate surface, which is prone to damage by rubbing, and the effect of the smallest splash of water or developer may be very severe. As soon as the work has been approved after a printing test, the negative should be varnished for its protection, and stored in a tissue bag.

Printing and Finishing

Provision must be made for both projection and contact printing, no matter what size is adopted as the standard for negatives; but if large plates are the rule, then contact printing will naturally be the normal procedure for the bulk of the work. It is fortunate that besides being the best method, from the point of view of quality, it is also the quickest and cheapest, and the most easily controllable. For long runs, a printing box is desirable, with provision, of course, for local shading by means of tissue paper masks. Single prints and short runs are best handled by the ordinary printing frame standing on edge at a fixed distance from an exposing lamp located in a box with a foot-operated switch or sliding safe-light shutter, leaving both hands free to manipulate the few simple shading cards with which an experienced printer will compensate for any obvious shortcomings

of the negative, or modify the result under the instruction of the operator. The bulk of the day's work in the printing room will be on glossy black-and-white paper of soft or normal grade, fully developed, fixed in two acid hypo baths, well washed, and glazed for slow drying overnight. Prints will have been critically inspected in a good white light when passing from the second hypo to the wash, and faulty ones will be at once reprinted — not doctored — so that the finishing staff will have no broken sets and partly completed orders to clutter up their benches. A certain proportion of the work will be destined for the block-maker, and the client may require a considerable amount of process retouching to be done on these prints, to glamourize the subjects up to the conventional standards of the advertising agent. This type of retouching is the preserve of a very skilful coterie of artists; it is quite outside the scope of the average photographer, and its use should be most rigorously restricted to this one purpose. It is fatal to excuse slipshod camera work or faulty photographic technique in the hope that the artist will make good the fuzzy detail, the formless shadows, and the burnt-out highlights which would never have been there if the photographer had been worth his salt.

When the block-maker's prints have been sorted out, there should remain a stack of prints of uniform colour and sparkle, requiring nothing but elementary spotting here and there before trimming and despatching.

Colour Photography

The commercial worker of standing will be quite at home in the production of three-colour separation sets of negatives, and will have practical experience of the making of carbro and dye-transfer prints, though he may consider the maintenance of a special department for colour printing a doubtful proposition economically. The growing popularity of the transparency processes opens up a field where genuine photographic ability of the type advocated in this article will find full scope. Impeccable technique is, of course, very necessary — and the specialist section contributed by W. J. Pilkington deals faithfully with this aspect; but the primary need is to become trained to experience and to appreciate colour within one's mind, and then to compose and illuminate one's subject in the light of this wider vision; to be emancipated from the limitations of the twenty or thirty grey tones of the step-wedge and to achieve the freedom of the spectrum.

Control in Advertising Photography

BY CHALONER WOODS, FIBP.

FITNESS for purpose (something quite distinct from utility) is one important criterion for judging an advertising photograph. The same photograph may, at one and the same time, be a magnificent job for a full-page advertisement in a good magazine, and an utter wash-out for a small space in the daily press, merely because of the mechanical problems of reproduction. Then again a photograph of a naked nymph, dancing chubbily upon her bathing costume, might be a winner as an eye catcher to stop you flicking over the pages of a magazine, but heaven protect me from the wrath of a hard-boiled manufacturer who wanted a factual illustration of his garment for a trade paper. He would be a rash man who would pick up a photograph, and say, apropos nothing in particular: 'That is a splendid advertising photograph.' It all depends!

The Photographic Link in the Advertising Chain

Advertising photography includes the whole of photography — everything, in fact, from creative or imaginative work, colour, portrait, press, commercial, and all the other branches, to the reproduction processes which are very largely photographic, and a great deal used in advertising. I shall attempt to limit the subject here to the sort of photograph one might expect an Advertising Agent to order from a professional photographer. I must, however, stress the point that this photograph, the finished product which leaves my studio, is but a link in the chain of production of the final advertisement. No good purpose will be served by discussions as to the importance of the original photograph relative to the other links, except to say that a chain is as strong as its weakest link. Control of an advertising photograph, the tools and study required, must be

our subject here. There is no telling what an advertising photograph may be. When your client rings up to break the news that he wants one almost immediately, you may be able to classify it as a portrait, commercial, colour, industrial or fashion photograph, but you will have little time or inclination to do so. A close study of the other sections in this book, and a wide experience, will be far more valuable than an exact classification.

The Economic Aspect

Whether you like it, or not, it becomes apparent that competition, fair or otherwise, exists in the advertising world. If you are an artistically sensitive soul with a sense of morality, there will be times when you will feel these qualities to be wasted. Your bread and butter may be coming from people whose understanding of photographic niceties appears to be non-existent. In the rough and tumble of the daily routine a reasonably thick skin will help to preserve the finer characters. But nothing will be a substitute for learning the basic principles of economics. The chain of production and distribution which always starts from Mother Earth needs to be studied if you are to find your place in the scheme of things. If you are to understand the ethics of competition, you must delve into the desires of mankind. You must trace some of the complexities of society, whereby a lump of coal is turned into a flavouring to induce our nymph to eat her custard, or our actress to gild the lily with cosmetics. The insatiable desires of mankind (including you and me) to wrest from the Earth the last ounce by labour, mental and physical, of every kind, are things to be observed before we can expect to control our opinions, or our advertising photographs. Looking in one direction we may see a packet of plates, the finished product of a photographic manufacturer, which becomes the raw material of the photographer. Further back in the chain we find chemical manufacturers supplying their finished products to become the raw material of the plate factory. In most cases we land up in a coal mine, offering its finished product to the chemical factory, but always we come back to Mother Earth in that direction. In the other direction from the Studio, our finished product goes to the advertiser, to the block-maker, to the printer, to the reader, and maybe, by way of the waste-paper basket, back to Mother Earth again. Within that world we must find a philosophy to control our advertising photographs.

Equipment

This survey of the scope of the subject I am writing about, only touching the possible bounds of advertising, showing that photography is only a small part of a large whole, and that we cannot keep clear of apparently irrelevant subjects



GROUP OF MAGAZINES. The idea of this photograph was to suggest, by the setting, the quality of readership. It is, in fact, advertising to advertisers.

such as psychology, politics, ethics and economics, is necessary before I can even begin to mention apparatus. The plain fact being that the foremost necessity is mental equipment. By far and away the most important control will be exercised by this. A breadth of outlook, considerable powers of both vision and visualization, an enterprising attitude and enthusiasm, a permanent thirst for knowledge on a wide range of subjects, the power to co-operate with others good-temperedly and creatively under any conditions, highly developed powers of reasoning, concentration, versatility, elucidation, and improvisation, sympathy, originality, and — well, — that will do to start with! If you cannot afford all that equipment, you might get along, like most of us, with a modicum of intelligence, optimism, and ambition to acquire the rest in the course of time.

You can, if you like, ignore all languages, except two — your mother tongue, and the language of pictures, — the language of the eye.

Apparatus in General

There is no such thing as advertising photography distinct from all the other branches. Any of the other sections in this book will give authentic advice about apparatus, and equipment for the particular kind of photograph which happens to have become an 'advertising photograph'. Since you cannot very well buy all the equipment required for all the various branches of photography, you will see why I included improvisation as a desirable mental equipment. It is not so much the camera that matters as what you put in front of it. That is the prime control.

Cameras, New and Old

I often hang my nose over the advertisements and imagine myself the proud possessor of one of those magnificent chromium-plated luxury models. I dream of the wonderful creations I would produce, of the group of admiring clients, looking at it, and me, in awe, offering to double the price of the photograph, and handing out contracts right and left, all expenses paid, and don't spare the cost — until I wake up and get out the old Half-plate. It is a fine old war-horse. It went over a cliff with its previous owner; he stopped on the first ledge, and it stopped in a bush a little further down, with its tripod legs waving in the breeze. So, it is an experienced camera, and experience counts. It is an old friend, too. The other day, after taking very many thousands of photographs with it, I was working very close up to a subject and the light glanced down the lens panel. As it was not getting into the lens I left it unshielded. A fogged negative resulted, due to the bad fitting of the universal lens holder. I was quite shocked by my own negligence in never having checked this, and surprised

that it had never let me down before. However, the camera and I are now more experienced; we are, together, a better photographer. But it shows how long it may take really to become old friends.

Get to Know Your Camera

The point is that no camera is any good until it is an old and trusted friend, until you are so used to it that your fingers seem to know of their own accord where to go, what to do — until, in fact, the whole camera has entered into your mental make-up. If you must buy a beautiful new camera, do as I have done, play with it like a child, for days, just pretending, before you ever load a film. Get the whole thing right into your mind, so that you can practically forget it when you are on a job. I have a 1/11 Soho Reflex with a $f/2.9$ lens, telephoto lenses, &c. I picked it up second hand in new condition in 1929. After nearly twenty years I realized that I had only used it at full aperture about twice, so now, it has the latest coated $f/4.5$ lens to give me still better definition. When I focus it right on a really good subject, I get wonderful results,— just as I used to do with the $f/2.9$. I cannot help feeling, when I read the advertisements at any rate, that my results must be better now! Like everything else, the old Soho has disadvantages; you must learn to use it, but (I don't know of course) I think you will make a better photographer learning on one of these, than if you start with an auto-de-luxe, self-setting, double-exposure-impossible, lever-wind, twin-lens reflex.

Disadvantages of the Modern Precision Miniature Camera

The modern so-called precision instruments have their disadvantages too. Their precision exists, often, only in one particular, in which earlier types had their weakness. Anyway, I have a lever-wind Rolleiflex, partly due to laziness because it is so much easier to carry about. But I have hardly mastered it yet. It is so easy, so temptingly easy, to blaze off the film like a machine gun, and not give due thought to any single exposure. After blazing off a dozen exposures, one invents a law of averages, that there must be one good one amongst them. There is no such law. You can point the blessed little thing at the wrong subject twelve times more readily than at the right one once. When you have mastered it, the Rollei is useful, really handy in fact for certain subjects, but it takes no less experience than the Soho. The old Soho can do more things, however, in its perhaps more cumbersome way.

There will always be a use for as many types of camera as are made, but if you collect too many you will always be out of practice with most of them, and spend half your time buying and selling. It is extraordinarily easy to buy a

steam-roller to crack a walnut. I strongly commend, therefore, the purchase of a pair of nut-crackers, and much practice in using them. It takes more skill to crack a walnut with a steam-roller, than to make a thorough mess of it.

Alternative Equipment

The best equipment is what you already have, if you have used it a good deal. The next best is what you have found to be essential as a result of much thought and experience in view of the work you do most of — and I do not mean the type of work of which you merely *want* to do more. Get the work first. If you cannot do the job with your existing equipment, consider carefully whether that is because you are not clever enough.

1 second v. 1 10,000th

I remember in the 1920's photographing a dancer doing a back-bend, standing on one leg, with the other, and arms, outstretched horizontally. One second exposure was our absolute minimum. You can imagine the problem — arms and legs waving about all over the place — but we got the result somehow. Now, of course, you can buy, at a price, equipment to get her dead sharp in mid-air. An awful lot of dancers will have to pay you to take them in mid-air, before the apparatus will have been paid for. Work it out. If you simply cannot resist the temptation to own the latest high speed flash equipment, you ought at least to sell the television set in order to free a little time and money for experiments!

The Essence of Control

Hundreds of pounds worth of any apparatus will neither bring business to you, nor take the photograph for you. So again, I stress that the most important control is the control of yourself. The achievement of this takes most of us rather more than a life-time. No progress at all can be made to this end by anyone submerged in apparatus and vague hopes. Never buy a steam-roller if a nut-cracker will do. Conversely, if you know for certain that you will have a lot of steam-rolling to do, throw away the nut-crackers, and go to it, but do not imagine that steam-rolling consists only of sitting in a beautiful stream-lined cabin, pulling levers and turning wheels. The main job, probably, is shovelling coal, and withstanding boredom, when you really get down to it.

Mental Equipment

The safest way to try to estimate what sort of work you will be doing next year, is to look back a bit and see what you have been doing. As near as anyone

can guess that is what you will be doing next year. So the equipment that worked last year will, with perhaps repair and replacement, work equally well next year — except the most important, the mental equipment, which should work better. Mental equipment will pay the best dividends.

Sizes of Material

There is a simple wisdom regarding apparatus, and materials as well, to bear in mind always. Don't chop and change the sizes. Standardize on one or two, $\frac{1}{2}$ plate and $\frac{1}{4}$ plate perhaps, or what you like, and build up on that, but stick to the same size if you change your camera. If you suddenly introduce a new size, you may find yourself with a better camera, but worse off in total equipment, because the balance of other equipment in the darkroom has been upset. This is all part of control, as you would soon see if you tried to develop a couple of dozen 5×4 films in a hurry with only $\frac{1}{2}$ plate hangers.

Studio Lights of To-day

Again, I need hardly say that knowing how to use them, which can only be learned by experience stimulated, perhaps, by reading, is more important than the actual lights. You can do perfectly well with all sorts of knocked up equipment and the requisite energy to make them bend to your will. When installing an electricity supply, provision for a minimum of 40 amps at 230 volts (apart from heating) would be in accordance with common practice. This allows for possible simultaneous use of 3 2kw spots, 2 500w spots, 2 1kw floods. A great deal can be done with such equipment, though you will find yourself about where I started if you have to take a dancer doing a back-bend in colour, until colour materials have speeded up as much as black-and-white have in the last quarter century.

The Studio of the Future

Development is going on, especially in the film studios, with compact source high pressure discharge lamps. If we adopt this form of lighting, as far as I can see, we shall need, perhaps, a couple of hundred amps, at 110 volts, or more, for a lighting set-up similar to that outlined above. If, on the other hand, development goes in the direction of high speed flash lamps, quite small current may be all that is required. There seems only one thing fairly certain, namely, that it will not get any cheaper to install. So before spending out on cameras, it would be well to remember that the most expensive camera will not take advertising pictures without light, but quite a simple camera may be adequate with appropriate lighting.

Portable Lighting

There are a number of lighting sets available on the market for work outside the studio. The chief requirement is portability, and good work can be done with a set of about three lights, two stands and some improvisation. These sets are usually a simple lamp holder with reflector to take either photofloods, or 500 watt 100 hour lamps. Before the more recent war, these lamps were designed with some form of ventilation so that they did not over-heat when pointing downwards. Now it is wise to renew the flex before it has burned away altogether at the point where it enters the lamp.

Wits, Tools, and Lengths of Flex

Before starting on an outside (away from the studio, as distinct from 'out-door', meaning in the open air) job, the first thing to gather together is your wits — it is surprising what can be done with very little else. Then a collection of tools, lengths of flex, fuse wire, distribution board, etc. Lastly, the lights. A spot light (or two) may be very useful, and perhaps flash equipment. One thing is certain, if you bring too much equipment, without an army of porters you will have no strength left to do the job. Control will have gone altogether. An experience I had will serve to show how difficult it is to suggest suitable equipment. A large chemical factory had to be photographed throughout. Their supply voltage was 250v, and we set off with suitable bulbs and a mass of equipment, which nearly filled the car that met us at the station. The first afternoon we surveyed the factory, and set to work the next morning. Before starting the 'Safety Manager' appeared, and asked to see the lights. Politely, but quite firmly, he refused to permit them to be used; little danger, he admitted, but they were against the regulations, so we had to work with what light existed, daylight and artificial. What wits were lacking in not finding out about regulations before starting, had to be made up for during the taking.

On outside jobs, there must be a law of nature, I think, that the unexpected will always happen. So even if you anticipate everything known, the unknown will occur.

Control Number One

This matter of the mastery of apparatus and technique of photography is one which can only be acquired by long and varied experience, and study. Fortunately, while gaining experience on the purely photographic side, some variation can be enjoyed by taking a wide interest in art, literature, science, psychology, politics, industry and economics. Real control in advertising photography will



MY HEAD GOES ROUND AND ROUND. A blatant eye-catcher, and a kind of photographic pun arrived at as follows : Having got a negative of a head with suitable expression, you block it out with photopaque, then solemnly plot out on a piece of paper where the head has to come for each of the eight exposures through the enlarger. You won't know that the paper slipped on the second exposure until you have made the other six exposures and developed the sheet of bromide. Then, of course, you start all over again.

come from your appreciation of these other perhaps seemingly extraneous human activities.

Consider for a moment a really successful 12 × 10 photograph in the hands of an Advertising Agent, who, having ordered it, and being liable to pay for it, says 'That is excellent. I had not dared to hope for anything so suitable.' (This is an advertising photographer's day-dream, not a quotation.) Does it matter a tinker's cuss whether you took it on an ancient field camera tied up with pieces of string, or on a 35mm Miniature Marvel, with an F/1 lens and hundreds of pounds worth of equipment in the cupboard? Of course not. You did the job well; I would even say it must have been a stroke of genius to wrest that remark from a client!

How It Was Done

This mythical photograph itself may have been perfectly straightforward with no particular background. It may have been the product of a most expensive studio set-up with back-projection and heaven knows what. Alternatively, it may have been the result of some clever combination work with an automatically masked background let in, or even a perfectly simple bit of double printing. Probably, however, in this country at least, it was a perfectly straightforward shot, well planned, efficiently executed, with, dare I suggest, a modicum of good luck, and printed with a minimum of dodging.

Keep Tricks ' Up Your Sleeve '

In advertising work it is desirable to know your photography very thoroughly, and to have at least dabbled in all the trickery that has been thought of. In practice, however, the best place for all the tricks is up your sleeve, ready for you to pull one out, if need be, to save a situation. There is a terrible temptation, if, with much pains, you have acquired proficiency at some trick, to use it simply because you can. The real control, I repeat, lies in controlling yourself. Only use tricks when a straightforward method is impossible. The art is to conceal the art. Substitute tricks for art, and it is even more true. The great strength of photography is its capacity for truthful reproduction of reality. When you get up to tricks, it is best to fiddle with the reality, and leave the photography alone. The faintest appearance of trickery in the photography may lose you more, by revealing itself, than the trick had gained.

Honest Craft and Ethics

No trick in the world will ever be a substitute for honest craftsmanship, clear thinking, and knowing your job. The proper use of the proper trick at the

proper time may, indeed, be honest craftsmanship. That is where some thought about ethics can improve your photographic technique. Bread-winning is a vital necessity for most of us. The advertising photographer, more than any other perhaps, will find the need to maintain a delicate balance between finance and art, photographic trickery and craftsmanship. A control to be acquired.

The Beginning of Control in Advertising Photography

The point arises as to at what point control in advertising photography is to begin. At the political and economic levels control is a little outside the scope of this book, though it should not be outside the scope of discussion within our professional body, or local gatherings, in which the ambitious photographer will join. Some control of the class of work to be done may be achieved by proficiency in the higher grades. It is well to recognize that the ability to get a good clean photograph of any old bottle, at any old time, in a great hurry, without becoming confused, is some qualification for the higher grades. Quick recognition of the problems involved, accurate technique, are the controls to be employed.

Eyes and No Eyes

Rapid appreciation of the problems calls essentially for the use of the eyes, through which memories of previous experience are aroused. Virtually all control starts with the simple use of the eyes. Any attempt initially to control an effect with, even an encyclopædic knowledge of the lighting diagrams, and the like, is doomed to failure. Visual experience is the key. The eyes are capable of perceiving in a flash what would take half a book to describe. (One of the reasons for the use of photography in advertising.) Consequently, if your mental processes do not begin with the use of the eyes, they are likely to be greatly retarded by a complicated mass of literary ideas. In much work, speedy decisions are vital.

Calculations

By the visual approach calculations of the utmost complexity in literary terms can be made rapidly. Obviously the co-ordination of the visual and all the other mental processes must be developed by experience and training. Powers of visual concentration develop with practice, and the power to see more, more accurately, and more intelligently, should be encouraged, because this is the source of the greatest control both before and after exposing the negative.

f. Numbers

I have so often been asked what camera did I use? What stop? Where did I place the lights? What exposure? and so on. I know these are technical matters

PRIVATE *likes* OF THE STARS



JOAN GREENWOOD

likes

BULLDOGS, BALLET AND GOOD CHOCOLATES

THIS lucky dog is a close friend of Joan Greenwood, famous British film star with a long list of pictures to her considerable credit. Green-eyed, vivacious, and only five-feet-two, Joan had a childhood ambition to become a ballet dancer and still considers ballet the best form of exercise.



French novels, cooking and 'pottering round art galleries' are among her other private likes. No wonder Joan has an 'educated' taste in chocolates! "I'm specially fond of Duncan's Capital Assortment," she says, "the centres are so deliciously varied." Take Joan Greenwood's advice — she knows. Capital Assortment is sold in $\frac{1}{2}$ lb. cartons for 1/- (also in $\frac{1}{2}$ lb. packs).

DUNCAN

THE SCOTS WORD FOR CHOCOLATE



ADVERTISING PHOTOGRAPHY is not always as easy as it may appear. The story behind this simple-looking shot is given opposite.



SKETCHES, or 'visuals', such as the above, are a good way of conveying instructions to the photographer. They are, in practice, scribbled much more roughly — the rougher the better — if there is any chance of photographic opportunity, of which this subject of a film star and bull-dog is an obvious case. The verbal instructions accompanying these sketches can something like this :- 'We thought you might get the dog sitting beside the film star, looking up expressively. Otherwise get what you can : remember we have to work-in the box of chocolates'. During the sitting the bull-dog was most uncooperative, and wore a permanent hang-dog expression, no matter what we did. The only time he looked at all natural was when lying on the floor. So in the end the film-star played to the dog on the floor and we got the shot reproduced opposite. Had we been bound to a 'tight' lay-out, and the original conception of the dog playing to the film-star, looking expressively into her eyes, the photograph would have been very disappointing. Of course, this opportunism can only be successful by very close team-work between photographer and lay-out artist : 'advertising 'space' cannot alter its shape to suit the whims of photographer — or bull-dog !

of importance, but I can generally perceive a wrong mental approach to the subject in the asking. What matters is what did it LOOK like. The obstruction of vision with technical preoccupations is a frequent cause of delay, failure, and frustration.

Give Vision a Chance!

If it is remembered that vision only commences in the eyes, and the main process occurs in the mind, it will become clear why I advocate clearing the mind of technical cobwebs in order to give vision a chance. Too many aspiring photographers stumble around in a twilight caused by a blanket of technical cobwebs. Nowadays, more than ever, technical knowledge is vital, and a lot of it too; but it is useless, indeed, a hindrance, if it outstrips practical ability. The control here is to keep theory and practice advancing steadily hand in hand — to do, as well as, to read.

Control in Processing — Magic v. Standard Methods

The idea of processing with some kind of magic potion, individual to each photographer, dates back to the days of Daguerrotypes. Until comparatively recently, one photographer would not allow another into his darkroom, lest he should discover the secret of processing. Probably the secret was very easy to observe because it rested in the name of a chemical in common use (secretly) by both photographers. Anyway, however chemicals may have behaved in those days, they have now been largely reduced to submission, and are susceptible neither to magic nor emotion. A grain of silver bromide may be relied upon to act with complete impartiality both in your darkroom and mine upon known scientific principles.

The Secret

The secret of my methods of getting the right kind of negative is contained in every packet of plates, or films — that is where I got it — and is known as the 'manufacturers' instructions'. One secret exists even to-day. Read the instructions before you throw them away, and comply, at least in general principles, with them. Developing technique, now, is a standard procedure. In black and white, fairly wide limits of error can be tolerated, but not in colour, as a rule.

Clockwork Control

Control in processing is, therefore, first and foremost, a matter of compliance with sound practice, about which ample information is published. The picture is made, or marred, when the camera goes 'click'. Thereafter a high degree of

care and diligence, skill and accuracy, and particularly, reliability, must produce a first-class result, or, rather, a first-class record of what was in front of the camera.

So-called 'Controls'

Many of the so-called controls of which we still hear, are survivals of the old magic idea. They usually consist of needlessly complicated ways of developing the negative to a different gamma, or altering the characteristic curve. Experiments along these lines are usually a way of escape from frustration due to poor choice of original subjects. The manufacturers are likely to be quick to publish any new formula which shows a definite advantage over existing standard procedure. Experiments in subject matter will pay the advertising photographer better than experiments with unusual developing formulæ.

Print Dodging and Control

The meaning I attach primarily to the word control is that of making things work properly, and reliably. The popular idea of control is what I would call mucking the image about. When it comes to printing there is no doubt you can do quite a bit of fiddling. It is even possible to improve the final result by such means, particularly if you have a well-trained eye, and a strong sense of restraint.

Print dodging, however, is fatally easy. None of us can resist gaining much experience in the delights of faking, the joys of giving a commonplace subject a superficial appearance of high art. The prime need in printing is the ability to make it a standard process, reliably producing results of technical excellence. I would call that the best control.

Realism and Imagination

With a discriminating eye, a well developed ethical sense, and practice, judicious shading, dodging, double printing, and such tricks, will need to be included in the standard procedure of the advertising photographer. Always, the less of it the better, because realism is a most important factor. If strict realism must be abandoned, a fine sense of restraint and good taste must be brought in to replace it.

Due Correction

I think the key to the whole thing is this matter of realism. Distinction needs to be made between merely correcting a fault inherent in the photographic process, and a definite departure from reality. I would regard the holding up of a shadow which unavoidably printed too dark as correction. Fogging down a

highlight in order to enhance another becomes at least perilously near to a departure from realism. There is, of course, little difference between holding up a shadow in printing, and throwing a light into it before exposure. The latter is the preferable control. It is true, however, that in much everyday practice, by dodging, the printer nobly and skillfully covers up the photographer's mistakes (not always avoidable under the conditions prevailing).

Montage

Photographers (as distinct from cinematographers) often use the word montage as denoting that by hook, crook, or other device, more than one photograph has been inveigled into a space usually occupied by a single photograph. As often as not this results in an unsuccessful jumble of photographs, each one being primarily useful for covering up the shortcomings of another. The original meaning of the word referred to the carry-over, or perhaps continuity, of ideas from one part of a film to others. The word itself is, therefore, best left to the films where it belongs. The jumbling up of photographs by sticking up and double printing is rarely successful. On the rare occasions, it can be most dramatic (if somewhat laborious) when due appreciation of the inherent departure from reality is compensated by brilliant sense of design.

Double Printing

This so-called montage is really only an extension of double printing. It must be understood that realism has been abandoned the moment the images of two negatives are confused, and the problem of making sense in the visual language must be solved. The solution will only be found in terms of the visual language, with a feeling for design, and a respect for the laws of creation. Otherwise a mere jumble will result. From a commercial point of view, the recompense will seldom be commensurate with the time involved, materials used, and mental and physical fatigue required for success. When a purely realistic effect is aimed at by double-printing, success, if at all possible, depends upon the scientific accuracy with which two negatives can be made which are virtually identical in terms of perspective, lighting, and a number of other visual factors.

Models

Control takes a new turn as soon as live models are included. I would not quite say that control of the model becomes the first consideration, although, obviously, correct casting, or choice of model, is a vital control. The advertising photographer must tactfully maintain his authority to make final decisions, but he must never smother the personality of the model, unless, of course, she has

none. Then, however he may fancy himself as a hypnotist, the result is likely to be poor. Particularly in the case of the less experienced model, diffidence will be an obstacle to the essential unison which should be established. There is inspiration to be derived from any reasonably experienced model. Establishing the right relationship with the model from the start of the sitting, or before, is both difficult and necessary. Especially with a strange, or inexperienced model it is often touch and go whether you can pull it off in time.

Outside Influences

The number of influences, and outside forces, which can come to bear, at the time of the sitting, to prevent a harmonious, if temporary, partnership with the model being formed, are legion. Few people, who are not themselves photographers, can appreciate the intense concentration required to control a sitting at one and the same time to establish this atmosphere of partnership, and also to solve all the artistic and physical problems of the particular subject of the photograph. The advertising photographer will need to know where psychology steps in. It is shocking the number of ways even a first-class model can be killed stone dead, pictorially speaking. When you add clients in the studio, bosses, mothers, representatives, telephones, and all other interruptions to a train of thought, it is remarkable that a photograph is ever successful. One can hardly abolish clients without abolishing the livelihood as well. Much real control must be exercised with subtlety. With enough philosophy you can control yourself (a point not to be overlooked!). Bosses can often be found jobs, preferably elsewhere, to keep them out of mischief, and even telephones, mothers, staff, etc., can be controlled by a well devised system. The big battle is so to organize everything, without appearing to do so, that some small fraction of the time available can be wholly applied to the job in hand.

Dreams on Paper

If a photograph can be made to contain some little suggestion of your dreams and aspirations, it will be the better for it, if your dreams are any good. But you cannot photograph a wish. Only what is there before the lens will appear in the final print. The expression of emotion requires technical skill on the part of both photographer and model. Without real use of the eyes, coupled with clear conception of the picture to be obtained, there is little hope of success in this field. Wishful seeing, and wishful thinking, must go hand in hand with accurate observation and mechanical vision. Just the right balance must be obtained between the two.



PATRICIA ROC AND WAITER. This is the sort of rough sketch giving instructions as to the limits of the picture area and general idea of the lay-out which it is best to work from when the photographs are required for a campaign appearing in different periodicals, etc. The actual photograph is reproduced opposite. Note the paint tins under the table legs (used to raise the level of the table top) but left in because that part of the picture would not appear in the final reproductions.



What Sort of Advertisement?

It is a little difficult to outline a procedure to adopt when taking an advertising photograph, so many are the subjects to be tackled, and so varied the objects in view. There is one golden rule. Get some instructions, if possible, before you start. What is it for? A poster or a 'thumb-nail' in the daily press? Some idea of size and shape of picture required. A horizontal photograph looks very insignificant spread across a single column!

Realism, and the Model

Let us suppose your client wants a shot of a coal-miner. A model can be employed, properties hired, pick-axe, or whatever is correct, lamp and accessories, not to forget some dirt and sweat for his face. Success will now depend upon your capacity to dream up a mental picture of a real miner, and to fit your made up model into that dream, in concrete terms, before the lens. Ah! Maybe you (or your client) don't work like that! If you want a miner, you get a miner! So down to the coal face you go. There you meet a real miner, with a real dirty face, and real sweat. Now you are getting somewhere, and out comes the camera. Immediately, you are confronted by the most bashful and inexperienced model you have ever known. Still you will have to dream up a mental picture of what a real miner looks like, and get a picture to fit your dream. Otherwise, the wretched 'real' miner-cum-inexperienced model will probably appear as an embarrassed idiot. There are no rules for producing the right conditions for either your real model or your professional model, except to develop a highly sensitive feeling for, or sympathy with, your model, and great concentration on your purpose, and mental and physical alacrity to effect it. Whether to creep up on him by stealth, and catch him unawares, or whether to make him act as he never acted before, or what to do, will be your control.

Layouts

Some clients like to prepare a detailed and inflexible layout, with a space into which your photograph must fit precisely, and without fail. This is one of the joys of the advertising photographer, as he struggles with a coal mine, a bashful miner, and a lack of light, only to find that the subject is of an inherently different shape from that demanded. Hence the need for control!

Art and the Space

I have heard artistic photographers complain of the insufferable limitation of the conventional rectangular shape, and the need for freedom to choose the shape to suit the subject, and their art. To the advertising photographer there

is hardly any limit to the restrictions that may be imposed by the 'space'; considerable artistic subtlety will need to be employed to get the right result, and also to fit the space. It is, however, possible sometimes, by close co-operation with the client, to overcome the worst effects of having to fit a square peg in a round hole. Some appreciation of the problems of lay-out, reproduction, and the fact that your client himself has a client to be satisfied will help to create team-work.

Finally, it is most unwise to keep a model in an awkward pose, while you try mentally to call up all that you have learned from a variety of books, to think of everything that goes to making a good advertising photograph, to remember your instructions, and a thousand and one other things, because, before you have done all that, the poor model will be pictorially dead. The key to the solution of a mass of complexities lies in your eyes, and your eyes alone will open the door to success.

Mistakes and the Retoucher

Retouching is best looked upon as a necessary evil, brought about by the shortcomings, in the first place, of the photographer himself. After that the need for it is due to conventions which abhor the truth which photography can tell with absolute impartiality. As such conventions are broken down, so the need for retouching fades. Retouching is also called for to counteract the shortcomings of reproduction methods, or sometimes to overcome the fact that the very truthfulness of the record on paper gives undue emphasis to details not so apparent in reality, or in movement. In the old days, the black and white negative was just about identical with what we now call the tri-colour blue separation negative. Much handwork became necessary to make up for the loss of the other colours. With skill in removing blemishes due to this, came the irresistible temptation to smooth out everything. A convention for filleted faces, creaseless and board-like garments, grew up as the skill of the retoucher wandered away from its legitimate sphere. The basic idea behind it all was flattery, and yet more flattery.

Flattery, Truth and Restraint

In the advertising world, flattery is still called for, but the old methods of over-retouching are getting out of date. Everything possible must be done by choice of viewpoint, lighting, make-up, pins and clips and all the other tricks for disguising uncongenial truth, to leave as little as possible for the negative retoucher. Even so, I regret to say, the retouchers need not fear for their jobs, if only because photographers will never cease to make mistakes, and a little

touch of judicious flattery will always be gratefully received. The modern trend, in advertising work, is to extend as far as possible the unobtrusive subtleties of flattery, to make a show of truthful realism, and rely upon a touch here and there, skilfully chosen and executed, to deceive the eye. In the better class of advertising work you can no longer afford to be blatant in your flattery. In another class the modern aerograph can give some wonderful imitations of the old-fashioned filleted-face era. This usually occurs after the photograph has left the photographer's hands, I am glad to say. The aerograph has, of course, legitimate uses, more particularly on backgrounds, and for lay-out purposes.

All-round Experience

A study of the reproduction processes, and their difficulties, and the ways in which your photographs can be simplified as to tonal values and contrasts, firstly in the original taking and secondly in retouching, printing, and working up, will give useful control. Some practice at actual retouching, and working up prints should be acquired, although it is not really necessary for the advertising photographer to attempt to compete in skill with the professional retouchers. He should, however, learn from bitter experience, how much extra work can be caused by a little carelessness in the studio, etc., and should be able to discuss practical points with the retouchers, with the knowledge that comes from being able to do it. It is very bad practice to leave anything to the retouchers that could have been corrected by photographic means.

Control in Theatre Photography

BY JOHN VICKERS, FIBP

IN this country, stage photographers were among the first to break the convention which seemed to insist that they should either imitate painters or resign themselves to becoming articulated recording machines. There has recently been a refreshing tendency for photographers to make their pictures in the camera, conceiving them in terms of the medium itself. Only occasionally does one see examples of the older mode with such symptoms as the 'billiard-ball' retouching of a close-up, the over-lit group with every costume-zipper and crease in the backcloth faithfully recorded, and the 'artistic' portrait stylized into a high-key wraith or a smudgy psychopath. Another kind of photographer has appeared. A man who is at least as much a part of the theatre as of the darkroom and who is entrusted with the task of interpreting a play in pictures, without the over-looking eye of the producer, as was common even fifteen years ago.

Requirements for a Good Theatre Photograph

I think that the extraordinary rapidity with which this transformation has taken place is largely due to the attitude of the handful of men who have specialized in this branch. They entered into the spirit of the world in which they worked. They learned, as the theatre producer and the actor had long ago learned, that the man must remain master of the machine, or the machine takes charge and the fact is immediately obvious. Never is this more apparent than in a play or in photographs of it. In cases where there is incomplete mastery, the feeling of life is noticeably absent, the pictures are stiff and unreal, and no feeling of the play's atmosphere is conveyed. I believe this to be a far greater defect than any minor technical faults which may occur when the thrill of working up to the climax of the

play in pictures preoccupies one's imagination. In my opinion, a good set of theatre photographs should *look* as though they were 'snapshots' taken during a live performance, yet with interesting composition, true to the play and carefully lit in a way which does not steal the observer's attention from the theme. You may ask why we do not, in fact, take action pictures with the miniature camera during a performance. The answer is that although occasionally a certain type of play lends itself to such treatment and exciting results are seen more often, an exaggerated atmosphere of melodrama is superimposed through the natural inability of the emulsion to record the relative values of light and shade as the eye sees them. Oddly enough, spontaneity is by no means invariably present.

The photographer who works for the management of the play will be required to provide a more or less complete picture story — frequently of 50 or 60 different shots, each of which must be of at least tolerable quality and upon any one of which may depend the photographer's reputation, when given full-page space in a magazine. Only occasionally will selection for this purpose depend upon the purely pictorial merits of the photograph itself. Above a certain minimal level of technical quality, other matters will be more weighty.

Stage work is, in some ways, quite unlike any other section of the profession. A set of portraits of a stage artist or a series of production photographs will pass successively before the critical eyes of the actors themselves, their producer and management, and the company's press representative. The pictures which are approved will be submitted to editors of daily newspapers, and illustrated weeklies, and they will be displayed as exhibition prints on the theatre front for months at a time.

The pictures will probably be taken at a dress rehearsal, with the photographer and his assistants popping up on to the stage to do each scene before the sets and costumes are changed. After each session, spotlights and cables must be whisked away into a corner out of the path of trundled pieces of scenery and furniture. There is no time for retakes or alternative shots. One has, somehow, to reconcile one's interpretation of the play with more practical matters within a single set of photographs. I will not dwell for long upon the difficulties; but I think that those who judge our work from the published and exhibited examples should know that the whole set of photographs of a play which they see, were probably taken in two hours one morning, with the actors exhausted by weary rehearsals and strange to the settings and costumes; the pictures having been arranged, lighted and taken at the rate of one every three or four minutes. Several days later, the retouched and finished display prints will be framed at the theatre, and 50 to 100 wholeplate Bromides will be on their way to the editors of newspapers and magazines.

Specialization

Extreme specialization of workers within the field of Stage Photography is as natural as that of the performers themselves. The photographer's temperament will largely determine his sphere of activity. The man who excels at capturing the spontaneity of a brisk variety act will seldom work upon a Shakespearean Tragedy or psychological drama. Photographs of the ballet demand special knowledge and a feeling for that delicate art. The appropriate equipment will be different in each case and the most suitable type of picture and print will be even more rigidly conditioned. Consequently, descriptions will be mainly of my own equipment and methods.

A large part of my work consists of professional portraits. That is, portraits of actors, writers, musicians and others who need photographs for publicity and illustration connected with their work. Basically their needs are similar, though the 'tempo' varies with the profession. Their portraits must include insight into their character as professionals — it is not enough to make pretty pictures of a pretty girl, she may be also a brilliant scientist needing recognition of more enduring talents — and the handsome juvenile features of a young actor may conceal an inspired character actor with ideas beyond an immediate film contract.

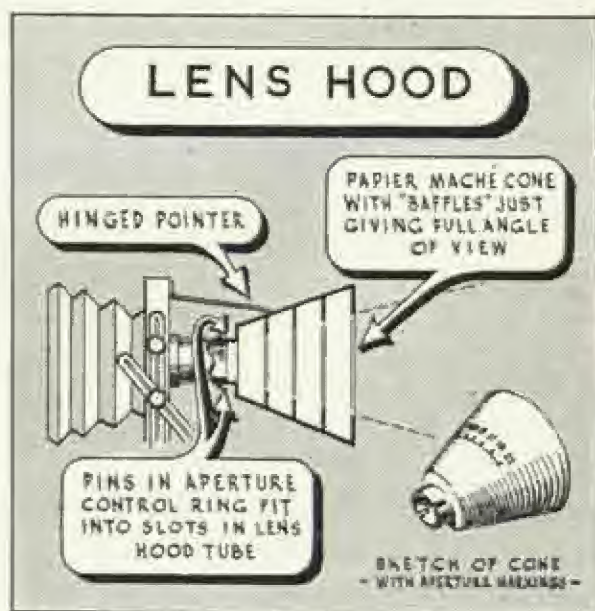
The First 'Control'

I owe the theatre a great deal; and not least, for the fact that it was by 'sitting in' at repeated rehearsals of fine plays performed by sensitive actors and directed by articulate producers, that I have learned what I have about the interpretation of personality. I have studied the more scientific aspects of emotional expression and learned therefrom a wealth of clinical facts; but I do not believe I could have begun to apply this material if I had not had great opportunities to watch many of our greatest actors and actresses go through the arduous process of creating vivid living personalities from lines of dialogue, superimposing on their own individuality the very thoughts of the characters they play. Early in his career, the actor learns that his 'instrument' is himself. If the photographer can learn also that his first 'control' of his human subjects resides within his own person, he may be less prone to praise or blame his equipment, or other people, for his own achievements or shortcomings. Yet, of course, his choice of photographic equipment will be a reflection of his approach to the task, and the care with which the equipment is selected cannot be too strongly urged, because of its importance in pre-exposure control of the subject-matter.

Flexibility and Speed of Working

In collecting my own apparatus, my aim has been flexibility, speed, and evasion of the disabilities of stage lighting equipment. Time is, in any case, a precious

commodity in the theatre, but I have found that the shorter the time one expects the actor to maintain a mood whilst one manipulates the apparatus, the more able he is to express the appropriate emotions when the picture is being taken. For this reason I prefer a Reflex camera — a $\frac{1}{4}$ -plate Thornton-Pickard with so-called 'triple-extension,' revolving back and quickly interchangeable lenses



The Author's 'home-made' lens hood.

of 6-inch and 8-inch focus, each with its own panel and fitted lens hood. The 'block-form' double dark-slides are conveniently pocket-size, and free an assistant for more strategic work. On the focusing-screen of a single-lens reflex one can 'track' a moving actor through a selected scene of the play, whilst the plate remains ready for exposure the whole time. No precious seconds are wasted inserting plate-holders. To similar ends I devised my own lens hoods, which are made from papier mache. Each hood is calculated to suit its particular lens on the quarter-plate camera, with due allowance for rising-front limits. All are generous in depth, cone-shaped with interior baffles; and each hood 'plugs on' to the aperture control-ring. The *f* numbers are boldly painted upon the enamelled cone and are read against a pointer which is part of the lens-panel retaining catch. There is no need to leave one's post behind the camera once satisfied with lighting and grouping. The 6-inch lens is used for long-shots and groups, and the 8-inch

one comes into play when close-up portraits are being taken. (A lens of longer focal-length is unwieldy, and unduly restricts the choice of camera-angle).

Camera Stands and Cameras

The best camera-stand I have yet met for stage work was the original Ensign 'Home-Portrait' stand. It was perfectly steady and its non-spreading legs could be withdrawn with one hand on the wing-nut — a convenience omitted in the post-war imitations, and one greatly missed when one has to negotiate the auditorium seating, or narrow stairs. A close runner-up is the Kodak 'Compact' stand with its admirable ball-and-socket head; though personally I find metal somewhat unsympathetic to handle when working at speed. Both of these tripods permit rapid alteration of height from about 26 ins. to 60 ins. from the ground.

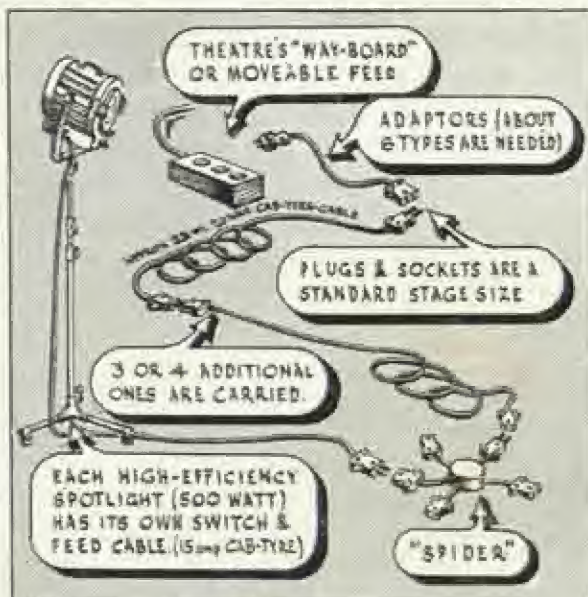
Many photographers for the stage prefer a larger negative and employ one or another kind of 'View-Camera' — most of them preferring cut film to glass plates. The lighting equipment used by different workers varies very greatly. Some rely entirely upon the actual stage lighting set-up, frequently with the addition of extra flood-lamps on stands, borrowed from the theatre's store of equipment. They enlist the co-operation of the Chief Electrician, which is usually gladly given; but, of course, the lighting employed by the play's producer has limitations in photography, as most of the main lighting is fixed and has coloured 'jellies' (filters) fitted. Other photographers use whatever equipment is already there, carrying supplementary portable lamps of the 'Photoparl' type to improve the modelling within the shadows. At a pinch, close-ups can be taken with these alone, and for small theatres, such lamps can be quite satisfactory. There are just two or three of us, however, who invariably take a full complement of apparatus to each theatre, notwithstanding the enormously increased labour and cost involved.

Mobile Equipment

My mobile equipment consists of three spotlights on full-size stands, one or more large floodlamps, and two or three small floods and spotlights on floor-brackers. This is, in fact, also my studio equipment, and through daily use I have complete familiarity with its tricks and capacities. No time is wasted on fruitless experiments with strange lamps, and the exposure, which may vary a lot, becomes an intuitive decision on a 'bulb' shutter-setting. The spotlights are 500-watt high-efficiency type, with light but sturdy folding stands, as used in the film studios. The whole set-up, with cameras and two assistants, fills a taxicab quite full, and weighs four hundredweight! Needless to say, the photo-call habit, involving, as it does, this haulage and the energetic manhandling of the theatre's heavier equip-

ment some hundreds of times within two or three hours, is no life for weaklings.

We carry our own distributor 'spiders' and many extension cables, all fitted with a type of plug which is more or less standard throughout the British theatres. Adaptors cover the few exceptions, so perhaps it is not surprising that theatre electricians are especially kind to us when we wish for their assistance in other



Typical array of lighting equipment and fittings required by the Theatre Photographer.

ways. Photo-flash, whether bulb or Electronic, I have never seriously contemplated as an alternative, mainly because the subtleties of lighting demand a greater precision of placing and intensity control than is at present feasible with either type. The actors can become accustomed to the incandescent lamps and I fear that punctuation of the dramatic atmosphere by the flashes would destroy that personal relaxation which is so desirable in the actor when being photographed.

The Moment of Exposure

At earlier rehearsals I make notes of the action of pictures I wish to take, and as I feel that my duty is to interpret the play itself, each picture is identified for the actors by the lines or action of that moment in the scene. I ask them to re-enact that moment approximately as they would during a performance. I quickly note the alterations to the relative grouping which will improve the

picture — usually entirely remodelling the group when it is weak in composition and at the same time indicating to my assistants approximate positions for my basic lighting. This 'inter-communication' is frequently achieved wordlessly and rapidly by gestures which are reminiscent of the tic-tac man, for a loud background of noise is our usual accompaniment. A brief rehearsal of the action, then the appropriate line of dialogue is 'run through' as I direct the spotlights to the last nicety and then call for 'Quiet!'

Control through Understanding

The actors 'go into' their rôles, speaking their lines with the sincerity of an actual performance. At the prearranged part of the action the movement stops like magic and 'click' goes the shutter whilst their minds re-live the character and their bodies are still 'alive' with the movement. Then the hush disappears and they sigh in unison as they again become themselves. There is a sort of magic at work in this process. Evasive of description, the sensation is quite uncanny when one feels once again that sense of 'oneness' with the actors and their play. It infallibly indicates to me that satisfactory pictures are being made and herein I believe is the most important 'control' of all. It occurs on stage and in the studio, with actors and with the private sitter. I would have written it off long ago as a personal hallucination if I had not found that at these times the sitters and even onlookers experience the sensation also. I do not yet know how this desirable 'rapport' can be produced to order, but it is quite certain that it does not exist when the photographer is preoccupied with his own importance or some technical problem. A brusque word to an actor or an unnecessarily sharp word to his assistant and it may evaporate. One should try to remember that it is just this 'magic' which the stage artist strives to create each night at the performance, before an unpredictable and anonymous audience. The sensitive stage photographer can be, for those few moments whilst they live the scene again, the actors' ideal audience. Receptivity and understanding on his part are the very essence of his craft, and for this reason, it will seldom matter whether he is a scientifically-minded compounder of pet formulas or an incurable label-reader.

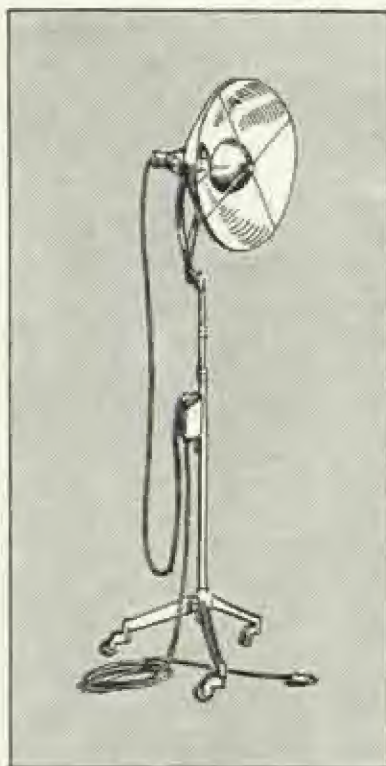
Development

Quite a different sort of magic lives in our developing tank, and within limits, I think it matters little what developer is used or which emulsion is selected for use. Examples of the finest work come from both types of photographer. Any panchromatic material suitable for portraiture will serve, and appropriate development may be that recommended by the makers of the negative material, carried out by time-temperature methods. Control of the relative intensity of

high-light and shadow detail is best effected when lighting the picture, and although selective intensification or reduction of one of these may occasionally be necessitated by practical limitations, it is not a desirable general practice.

Choice of Lens and Camera Angle

More important are such matters as the choice of lens or camera angle. Every snapshotter knows the effect obtained when father's feet project towards the camera, and subtler use of this phenomenon can be vividly used in creative theatre photography. My first deliberate use of this was before we had heard much of 'deep focus' in the cinema (where short focal-length of lenses in use makes it easier). Users of the field type of camera can exploit the swing back in

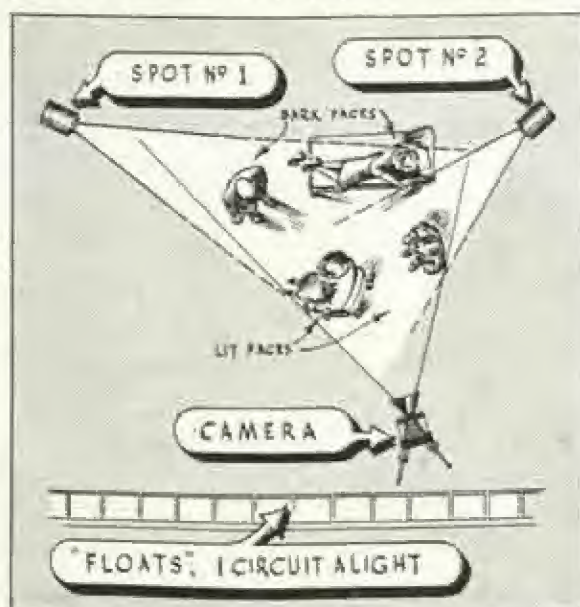


A 1,500 or 2,000 watt High Efficiency Flood-lamp (convertible studio lamp) — an important item of the author's lighting equipment.

'deep shots' and with certain stage settings, the distortion of shapes resulting from its use may extend the intention of the decor designer still further. In the close-up portrait a low camera angle, with a lens of moderate focal length, can be exploited to strengthen a weak chin, where this is appropriate and permissible. The conscious choice of camera position, even in large groups, can very greatly influence the atmosphere of the picture.

Discretion in Control

Discretion, in such deliberate exercise of control, is essential. Nothing has done more to discredit the photographer as a craftsman, than the shameless use of tricks. This is particularly so amongst theatrical Casting Managers, who resent the waste of time involved in interviewing actresses whose actual appearance on

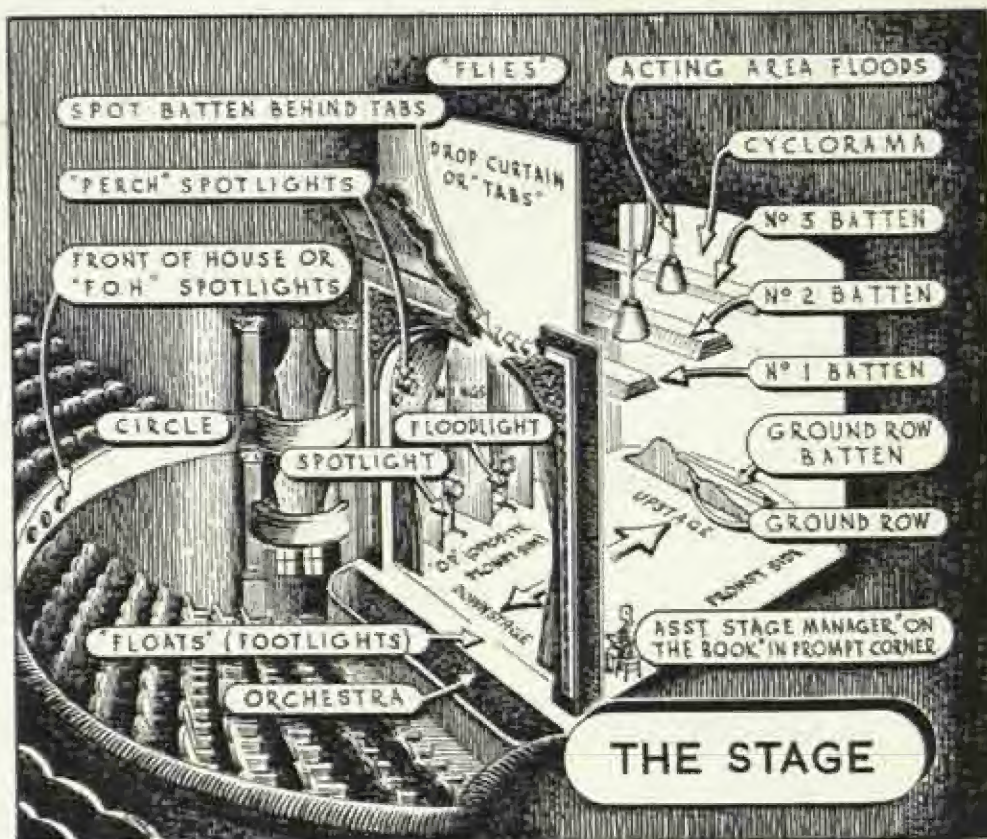


A typical method of lighting for a Stage photograph.

the stage is vastly unlike the reshaped glamour girl of the photograph. Oblique printing or the use of the 'swing-back' camera movement to increase the apparent height in a full-length portrait — or even to modify the proportionate size of head or legs to body — may conceivably be justified within the conventions of fashion photography, but require caution in the stage artist's 'casting photographs.' For those with a bent towards 'faking,' Edwin Smith's admirable little handbook 'All the Photo-tricks' deals with almost every conceivable method of exercising control, though I think that even this exceptional author might hesitate to apply some of the more elaborate methods, if he were faced with the time limits of the theatre.

Lighting

Before I pass on to other matters I should like to say a word upon the subject of lighting. In my opinion, whatever has been said to the contrary, good lighting is *simple* lighting; and there is no special departure from this general rule in stage



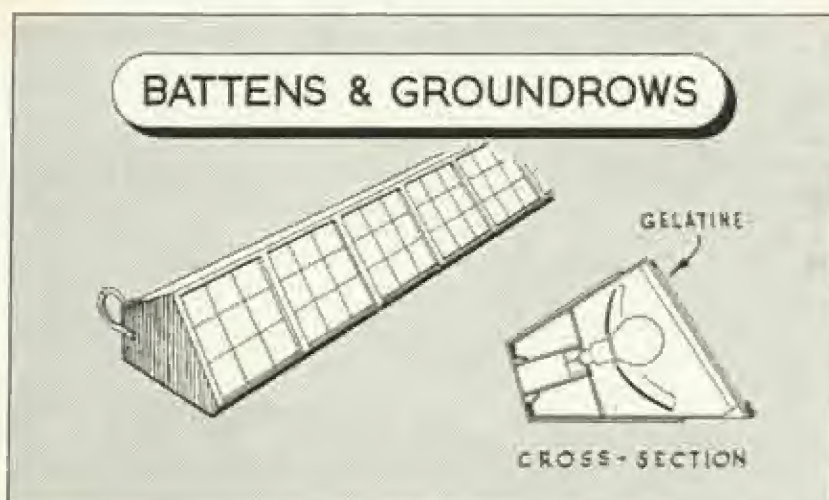
The Theatre photographer must have an exact knowledge of stage lighting equipment, the position of each source of illumination and the part it will play in his photograph.

work. Unless the pretended source of light (as implied for instance by the 'property' light-fittings of an interior) indicate otherwise, one can hardly do better than to learn from nature. Day-time exteriors should be lit from a high level, with at least some concession to orientation according to the location; to the time of day, and to the sort of weather indicated in the setting of the play itself. Rays of sunlight are almost perfectly parallel — so a spotlight (which roughly approximates to this in its directional quality) is immediately indicated. General light from sky and clouds is represented by the long battens of small floodlamps which hang high, across the stage, and serve the photographer as well as the theatre audience. Reflected light, as though from ground and buildings, is added judiciously from footlights; or better still, from the portable floodlamps near to the camera. The conventions of the stage itself permit some latitude in such additions as high backlights upon the hair in close-ups; and in interior scenes, even more freedom is possible, for artificial lighting does, in reality,

introduce numerous effects which are not common in nature. These principles I consider apply equally to close-up portraits and to groups from a play; and I adopt them, so far as the conflicting demands of the various characters' positions permit. This is not usually difficult, for, in few scenes do more than two persons actually dominate the action, and one naturally composes the whole picture around that fact. To labour the importance of lighting in theatre photography would be wrong. The lighting is, after all, only one of the factors involved.

Negative Materials and Make-up

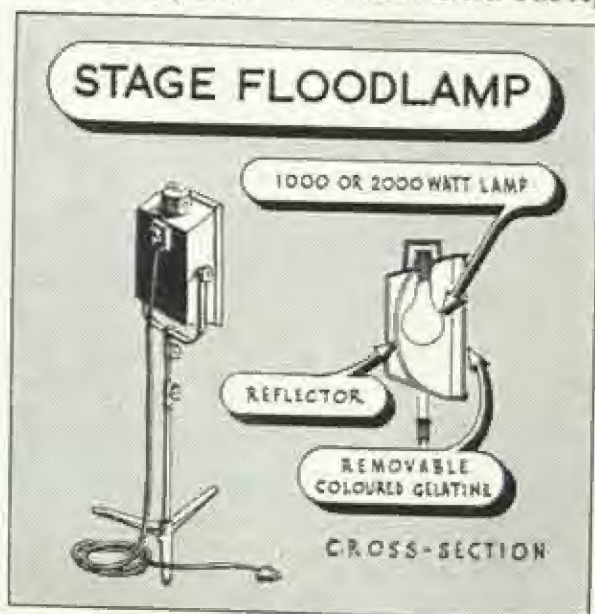
Control through make-up is even less important. For 'straight' portraits I prefer my sitters as they are, and employ Panchromatic plates not over-sensitive to red to avoid the anæmic mouth so common in film 'stills.' In a character part their own stage make-up will be satisfactory, especially as most actors have film experience and, for a 'photo-call', they will smooth out the harder lines and planes of tone which they may put on for an actual performance. Very rarely will it be



Constructional details of the basic stage lighting unit.

necessary to remind them of this. It is true, that if the photographer is using a high-speed panchromatic emulsion of high red-sensitivity he will be wise to ask the Assistant Stage Manager to ensure that Carmine III or IV is used for the ladies' mouth paint and a touch of No. 9 for the men; but consistent with my policy of demanding as little as possible from the sitter in small matters, I prefer to suit my material to the subject. The Ilford SG Pan. Plate is my favourite and when I wish for greater speed, the Kodak P.1200 seems to combine this with a

red-sensitivity which is quite acceptable. I will not digress here in justification of the use of glass plates, beyond admitting that I like them to handle. I prefer the two emulsions mentioned, and glass negatives are simple to store without deterioration. This latter point is of some importance, for a very appreciable portion of theatre work is of potential historical interest. The reputation of com-

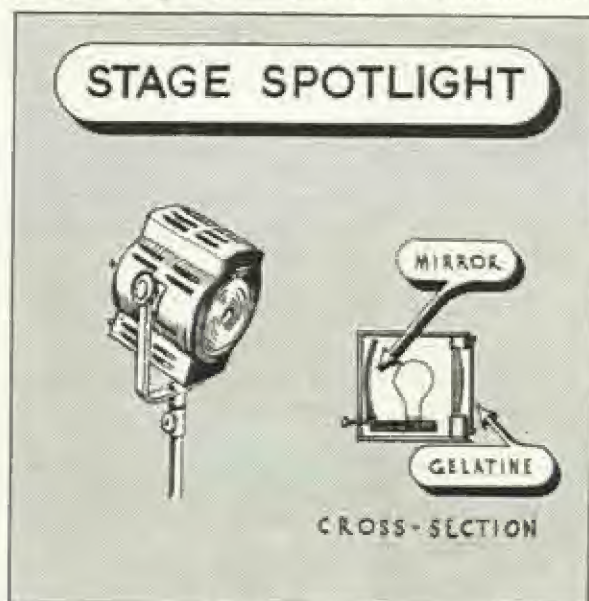


A general purpose lighting unit.

panies such as the Old Vic brings a constant demand for reprints from their earliest productions, and stage photographers as a whole have been asked by the Society for Theatre Research to take every precaution for the safe-keeping of records of productions which have obvious historical importance. Members of this learned body are, however, not quite so happy at the 'controls' which photographers exercise in interpreting a play. They feel, perhaps with some justice, that the way of the future historian is made hard by the inventiveness of a creative photographer. They prefer the straightforward 'record', at which the average management would compress its lips in unspoken disgust, with which the magazine editor would scrape the crumbs off his tentime layout, and which few present-day photographers would think of exhibiting. After learning their opinion, I have made a habit of taking, whenever possible, one full-stage record of a dominant passage in each different setting in addition to the photographs intended for immediate use. When circumstances permit, prints of these will be deposited as requested in Mrs. Enthoven's Collection at the Victoria and Albert Museum.

Exploiting Limitations

The historian's complaint is not unfounded, if factual information as to groupings and positions of furniture and 'properties' is to be obtained by future researchers, for it is practically never possible to photograph a scene with actors in the setting exactly as they were at the performance itself. As soon as the camera comes up



The versatile spotlight can provide the 'sunshine' effect.

on the stage at all, and particularly in close-groups, the 'lines of sight' (as the decor designer calls them) — adjusted to suit only the auditorium seating — are altered. Stage lighting apparatus and non-existent 'inner rooms', creased back-cloths and so on — all these details conspire to kill the conventional illusion of reality. Properties such as paintings and decorative furniture, which may have looked so well, when viewed from the 'fourth wall' of the audience, are frequently too broadly painted for the camera's searching eye. What is tolerable when stage characters are revealing their inner souls or following their tragic destinies, may be intolerable in the still photographs. Careful lighting and selective focusing may minimize the faults and give opportunity to the creative photographer to interpret in his own way. Furniture may be moved, or even rejected, if it obstructs the more intimate demands of the camera. Small-part actors whose appearances in the performance are made only at unpictorial moments may be 'cheated in' if a composition is improved thereby, and if this can be done without falsifying the general feeling of the play. More rarely, a minor rôle may be missing if an

artist is ill or if he or she should be filming. Unless vital to the main theme, the pictures noted in my list (which we call a 'photo-plot') may be modified in view of this fact.

It is apparent that 'control' of many kinds is inevitable, and if a photographer is wise, he will resolve to exploit the limitations to the full — as is the rule of craftsmanship in any profession. Every factor in the human and material subject before one's camera which might be regarded as a 'difficulty' is equally capable of being the very means by which one achieves one's intentions. This is seldom the way of the opportunist with an eye on the financial reward, and may be the reason why, in recent years, so many new photographers have swept into theatre work like lions, to depart quite soon like lambs. The specialist, in this section, is not so heavily rewarded as the photographer who advertises more tangible commodities, and the theatre pays us the compliment of treating us like 'pros' of their world. We sit — sometimes for days at a time — watching rehearsals in progress, taking notes and awaiting our opportunity to call 'photographs,' before the weary actors go up for yet another change of costume. Maybe, with a working day employed in this fascinating, but unlucrative, fashion, suddenly it will be decided to postpone the photocall for a further day whilst alterations to sets or costumes are made. When the call is at last fixed, it may well be at a day's notice on a Saturday or Sunday, or upon an evening previously 'booked' for some other event. Hurried reorganization of our week's schedule is followed by the intensive work needed to retouch, print and finish the copies used in display and publicity for the show.

For the theatre folk themselves, the excitement and panic of the last two or three days before opening are but the prelude to the more settled life which may follow an amiable reception at the first night. The photographer is, by then, away somewhere else, involved in another company's heartaches and sharing their troubles. It is enthralling and stimulating and I, for one, love every minute of it. One becomes so much a part of the 'work in progress' atmosphere of rehearsal with its target of perfection somewhere in the distant future of tomorrow, with every soul in the house straining nerves and body to bring his portion closer to that perfection — so much so, that one finds it very difficult to sit inactive at a public performance of any play. The magic of 'it will be all right on the night' and the smell of glue-distemper and greasepaint are enough to overwhelm the innocent on his first visits behind the scenes. Even when this naive infatuation has been outgrown, one comes to recognize theatres by their backstage atmospheres, mostly indefinable, but one in particular — the Old Vic in the Waterloo Road — has a personality which is almost alive. Even derelict, after being smashed by bombs and empty for months, the odour, like a mixture of thick woollen socks



BRIGHTON ROCK. *Re-grouping emphasised a particularly dramatic moment in the play, the back of Richard Attenborough (as 'Pinkie' the central character), silhouetted against the scene interpreted his sensitive adoption of a 'Psychological posture' which is typical of the elementary development of certain types of delinquent. The role of a 'wise boy', 20 years old chief of a razor-gang, demanded that this subtlety should not be overlooked. One thing was overlooked, however, the coincidence of his head with a picture on the far wall above, a detail which we remedied with Dye-scotch on the print.*



and home-made cake, is nostalgic. It recalled the hurried dash from work when, as a half-starved young man, one queued for the ninepenny seat to see *Hamlet* excitingly different from the way one had imagined it as one trudged through the school text a year or two before.

After the place was repaired somewhat, the students of the Old Vic Dramatic School worked there for four years, and I spent many happy days with them; and yet, a snatch of *Bohème* on the lips of a happy student is enough to evoke again the old magic. Most old theatres have something of this, even when used for years as carpet warehouses and furniture stores. If rescued and dusted down, they seem to come alive the moment a painted flat or make-up box enters the door. I think that this feeling can be of the greatest possible inspiration to our profession.

Overworked Technical Tricks

Photography is too young yet to have evolved much of a tradition to back it, as the stage has. Our technical accompaniment has moved too fast for us to have developed that all-important background. Many of the best-known photographers of the past have been guilty of overworking some technical trick so that it became a mannerism, too firmly associated with their personal reputation to be used by other photographers at all. Most of these mannerisms were achieved by 'after-treatment' of the negative and print. Overprinting and double exposure, 'Rayograms' and shadow-printing. All these were seen in photography. Microphotographs and macrophotographs of house-flies' eyes and Aertex shirts, cut-and-paste 'Collage' of labels and newspaper cuttings associated with photographs. All this seems so long ago now, yet traces of the mental attitude are found here and there, but the theatre, always quick to notice when a fashion has passed, encouraged the simpler 'straight' portrait and accepted the unusual only when exceptional merit or appositeness gave point to the stylism.

Solarization

Returning to the more practical aspects of our subject, we shall consider the question of 'after treatment' of negatives and prints; and taking firstly one of the most drastic of after-treatments, 'Solarization,' it might be amusing to look at the dictionary definition of the word 'solarize' — 'to spoil by long exposure.'*

Needless to say, it is unlikely that any picture by Man Ray which had been 'spoiled by long exposure' was ever seen by the public eye. I believe his method was similar to the accidental effect observed by many an impatient amateur

* Concise Oxford Dictionary



WILFRED PICKLES. A portrait of a personality too well-known to need a simple record of his likeness. This picture could have been made by double exposure. In fact it was made upon two separate plates — both used for straight-forward printing — but here combined by superimposition to interpret something of the many-sided personality which is Wilfred.

before the 'time-temperature' developing tank became so universal. It has been more accurately named 'Pseudo-Solarization' and more conveniently the 'Sabattier Effect' after its discoverer. It consists in removing the partly developed negative from the developer, exposing to a weak light and then giving further development—for a rather longer time than for normal work—to develop out, within the thickness of the emulsion, the secondary image. Not only do broad areas of shadow become partially reversed, but around areas which were originally light in tone, bounded by strong shadow, a kind of soft double line appears alternating light and dark. The use of a high contrast printing paper conceals the overall veiling caused by the fogging. In inexpert hands the effect is rather uncontrollable, and the experimenter may prefer a further method which one might christen 'pseudo-pseudo-Solarization' for it consists in developing, fixing and drying the first negative in the ordinary way.

Pseudo-Solarization by Printing

If considered suitable, a print may be made, by contact or projection, upon a slow plate, such as Ilford Fine Grain Ordinary. This is developed in a weak, soft-working developer, such as a plain metol formula or a diluted Kodak D163, by the light of a ruby safe-lamp, until a definite but thin image is visible. Brief exposure, after a rinse in clean water, of the emulsion side to a dim white light is followed by rather full development with a more energetic solution such as full-strength Kodak D.163 or Ilford ID.2. Normal fixation and washing follow, and if a final print which is predominantly *negative* in effect is acceptable, the resultant plate may be projected without more ado; (emulsion side up, by the by, if the picture is to be the right way round). If the predominance of a *positive* effect is desired, a normal contact print of the intermediate result is made upon another slow plate, and the negative obtained may be printed upon sensitive paper like any other. The effect is rather limited in its application, and is best kept for the unusual subject. An example which springs to my mind is the Death Scene from *Peer Gynt*, where I used it to convey the strangely unreal quality of that part of the play.

Use of Uranium Intensifier

Few of the other chemical techniques need great elaboration, for straightforward corrections of inadvertent errors are similar in all branches of the profession. It may, however, be of interest to note, that occasionally it is just not possible to produce enough general light in the theatre to relieve shadows in a play where these might convey a more sombre atmosphere than desired. Here one may employ with particular advantage Uranium Intensifier—much maligned by

those whose ideas on chemical cleanliness are primitive. Adjustment of the relative proportions of Uranium Nitrate Solution to Potassium Ferricyanide and dilution of the mixture will give control over the intensification. At early stages in its progress the effect is more noticeable in the thinner parts of the negative, and if careful rocking has ensured even action, the negative may be removed at any stage, and transferred to a dish of $\frac{1}{2}$ per cent. Acetic Acid. Rapidly the new deposit colours up reddish in tint, and after several changes of acidulated water, it may be dried without further washing. Ordinary washing in our alkaline town water removes the stain patchily. This solubility in alkaline solutions may be of value if early experiments are carried too far. A brief rinse in $\frac{1}{2}$ per cent. ammonia solution returns the negative to its original state and after *thorough washing*, a fresh attempt may be made with new intensifying solution. One warning — Uranium Intensification is dangerous if the negative and dishes are not completely free from Hypo, developer and other foreign substances. Stains appear which defy any method of removal. Otherwise it seems that the negative is completely durable if boxed in a dry place. Some such I have kept safely for more than ten years. An example of deliberate use of Uranium Intensifier to generate a feeling of strangeness in the 'other world' of the Priestley play *They Came To a City* is reproduced (p. 141). The stage lighting was too unwieldy to modify and it rather overpowered my own lamps. Deliberately keeping the exposure on the short side minimized shadow detail and Uranium enlivened the highlights effectively.

Control by Reduction

'Superproportional' and 'cutting' reducers for altering the final balance to suit available printing papers are too well known to need further discussion, except for a point which is not usually mentioned: reducers tend to leave the emulsion with a highly glazed surface and Intensifiers bring a roughness — even grittiness in their train; and so difficulties are created for the retoucher.

On plates, only the coarsest work can be added upon the glass-side and this is not good practice as a general rule, if frequent reprints are needed. Local reduction and dye-work are, however, very useful when it becomes inevitable to 'shoot off the eye,' i.e. when the angle of view cannot be altered to give an unbroken expanse of the stage back-cloth or 'cyclorama.' It may be wrinkled or creased, or rather too narrow for the downstage pieces of scenery. Ugly shadows may be unavoidable (here is a common example of how tolerant the human eye is of relative *tones* and how greatly influenced by *tint*). Very few stage settings intended to represent the open air, have a sky-cloth or 'cyc' lit as brightly as the downstage area of the stage, nearer to the audience. Partly this is deliberate, to focus atten-

tion upon the characters — partly it is due to insufficient equipment, for a fabulous wattage of light is necessary on the backing if the camera is to give a tonal rendering approximating to a real sky. The fact remains that the reflected light from the sky-cloth is usually no more than one third of the highlight reflection from the characters. Shadows, tolerable 'from the front,' become painfully obvious in the pictures. Dye work may assist here, though, like air-brush work, it tends to become 'unphotographic' in quality. Local reduction with careful application of Farmer's Reducer may lower the printing-tone of unimportant details which were too light in tone, and Iodine-Cyanide on an unlicked brush may obviate 'knifing' by the retoucher. This last point is especially important when, like myself, the photographer uses a condenser enlarger; though scraping of the emulsion can be satisfactory if 'Fricol' is carefully used to re-polish the abraded surface.

Rules for Retouching

Retouching itself follows orthodox practice in the methods of application, and I consider John Erith's general principles to be particularly suitable to the stage close-up. My own rule is to leave in any feature if there is the slightest doubt about whether it should be removed. The least possible is the best possible in retouching — if the work is skilful and unobvious. The old school 'comma' or 'hatching' type of work will not do at all. Poor, also, is the use of a heavy diffuser over the enlarger lens, to minimize the work required. This removes the reality and textural quality and still leaves the broad dark tones under eyes and around mouths where they influence the apparent age and temperament of the sitter.

Preferring the sitter's face to a mask of make-up, I avoid the use of 'foundation' except in 'character portraits.' Consequently the mottling of healthy flesh tones and exaggeration of the underlying bluish tone beneath the eyes needs attention from the retoucher — particularly when the subject's skin is fair and transparent. We have adopted a kind of microscopic 'scribble' for this type of area-retouching and it results in a texture very like that of human skin — quickly worked-over in print finishing, to remove the retouched appearance. Certain types of skin have an unattractive 'orange peel' texture in close-ups and then there is nothing for it but to work all over the face, aiming at a final appearance of a naturally pleasant skin. Laborious work it is, and I propose to make no apologies for undertaking it.

There is a deal of truth in the old adage that a girl cannot play Juliet until she is as old as Juliet's nurse. Such experience is hard-won, and just as I feel it legitimate to remove the exaggerations of the camera from an ordinary portrait of a woman sitter, so I feel happy in conveying the *apparent* age, as seen from



SCENE FROM 'THEY CAME TO A CITY.' Unavoidable flattish lighting improved by deliberate under-exposure and intensification of the negative. Regrouping also gave darker figures down-stage.

'the house' of an actress whose greatest talents may be in the rôles of girls years younger. Whether the reader entirely agrees or not, he will allow that in the final print, retouching should be as invisible as humanly possible; and that is where print finishing steps in.

A slightly different approach is necessary in 'character' portraits, for the camera is not actually photographing — say, the aged Dauphin in person. Alec Guinness is giving an interpretation of the rôle, and though the margins of his wig will need attention, the 'character lines' of his make-up should not be so worked over that he actually becomes an old man. That does no justice to his artistry. Discretion is vital when retouching such portraits — to leave the picture essentially a portrait of the actor in that particular rôle.

Making the Print

The retouched negative will now pass to the darkroom for printing, and in times past, might now lose the last traces of photographic quality. It might be insulted by the imposition of canvas or 'etching' screen textures, 'Brometched' or 'Brom-oiled' and otherwise converted into an imitation of some other art; or vignetted artificially to imitate nothing at all. Yet there are quite permissible refinements which may be introduced at this stage. The rectangular shape of the original negative may be altered slightly in proportions, either according to an earlier intention or considered only at this stage. The grade of paper will influence the relative tonal contrasts, and 'dodging' needs no description — though too frequent reliance upon this trick is slovenly if used to conceal carelessness in lighting. Details which may have been important to a daily paper's Art Editor, may be out of place in an illustrated weekly magazine, consequently, 'shading' or 'dodging' will be useful in these cases. A glossy print will be essential for all blockmaking and magazine reproduction; but for exhibition, a more 'sympathetic' paper may be selected. I use both Bromesko and Plastika in lustre surfaces, developed for full warmth of tone, for all display prints. Toning is rarely necessary and then only for special effects — as, to give an actual instance — in photographs of a parody of the Victorian age, where lace-doylies were massacred for frilly edges to the mounts and an obvious burlesque of the age had been used in the photography as well.

Very occasionally, too, a deliberately diffused picture may have a special function — though the 'smiling through the tears' effect might be more in place in a movie-sequence, than among 'stills' which cannot express emotions in the same manner. Multiple printing, like multiple exposure, needs to be very skilfully handled for success, and if over-frequently attempted is very likely to become another mannerism.



ALEC GUINNESS. *'Character Portrait' in which his carefully created make-up as the aged Dauphin in 'Saint Joan' is left more or less unretouched.*

Enlarging

Whilst on the subject of printing, I must admit that I should like an answer to a question which has bothered me for some time. Why are there so few 'condenser' enlargers for the larger negative on the market? Like many others, I 'grew up' on an old horizontal 'Artist' enlarger with a primitive lamphouse looking like a retired locomotive and beautiful 8½ inch double condensers. For my first three years as a 'pro' I used nothing else. The lens was one from the camera and one or two little gadgets made it quick in operation — parallel runners for a 'bed', and a rubber-solutioned easel held the sensitive paper.

It was true that the rubber solution sometimes 'let go' during exposure, but it was a wonderful old thing, that enlarger. None of your fingle-fangle auto-focusing; no flashy chromium or guileful lacquer to flake off and rust about that respectable old personage, built as he was to last several lifetimes, in vitreous enamelled sheet iron and well seasoned mahogany. Why, I could have hauled coal from Newcastle in him, if I'd wished. Yet for the last few years there has been a sort of conspiracy to drop the condenser, like a poor relation — except in the case of the enlarger designed for use with relatively small negatives. In miniature work where the degree of magnification is often very great, the greater contrast and the more effective translation of negative densities into the projected image are, therefore, essential. Is it so unwelcome a characteristic in the more tolerant world of the larger negative? My present enlarger is a Lancaster Vertical with double condensers and optional Opal diffuser as well, and after its ten years of service, I am still not ready to replace it for any other I have yet seen.

'Jumbo' Enlargements

Speaking of enlargers prompts a word upon the 'Jumbo' enlargement (as it is sometimes called). A theatre may occasionally call for poster-size prints from life-size upwards, and here is a very legitimate opportunity for the use of some kind of 'screen' to break up the image when viewed at over-close quarters. An enlargement of a photogravure texture; fine copper gauze; a Block-maker's mechanical tint; or even an enlargement of the texture of a fabric or a drawing paper — any one of these may be employed to make a 'screen' for the purpose, binding up a transparency of it with the negative. The coarse silver grain and minor blemishes are mainly obscured and a greater affinity between the photograph and the signwriter's lettering is obtained.

Colour Photography

At the risk of trespassing upon the territory of Mr. Pilkington, I would like to say a word upon the future of colour photography in the theatre. I think that

stage photographers will be fortunate in that the theatre is somewhat reserved in its reception of any new accomplishment. Though some experts predict that, ten or fifteen years hence, colour work will have largely ousted monochrome, I feel that this will be less so in stage photography than in almost any other sphere. There will, of course, be a growing demand for colour work from the illustrated press, and the theatre photographer will be called upon to provide a proportion of colour shots for this purpose. Typically Cinderella-like, he will have a number of disadvantages to overcome which will be less troublesome to his colleagues. The more brilliant colourings used in costumes and make-up will emphasize the tendency of the three-colour processes to intensify the apparent saturation of colour. Although, myself a step-wedge fanatic, I insist that the *only* important thing about the accuracy of the colour-rendering is that it should *look* truthful and, in permissible subjects, that it should be aesthetically satisfying. I couldn't care less that a crude appearance can be demonstrably a sort of optical illusion. A 'dead-match' between a fabric and its rendering means nothing, as anyone who has ever dressed a doll or chosen a suit from a pattern book can testify. I've already observed too many instances where the insensitive eye has responded to the very novelty of full colour work with 'Ooh, what a lovely blue!' and the like, to deny that popularity and profit will attend the practice of colour photography in other spheres; but the attitude of the theatre to expect the finest and pay the least will not change upon such elementary grounds. The stage already employs some of the world's finest decorators and scenic artists upon settings and costumes. It is unlikely that such highly tuned senses will be impressed by work which is not vastly better than the average examples to be seen today. Having, with the aid of our noble technicians, mastered that little problem and its accompaniment of modified lighting equipment, we shall, no doubt, face the retouching of colour portraits with the same equanimity that we adopt towards the speedy production of the exhibition prints, and if the tenuous thread by which our reputations hang stays unbroken, it is possible that the standard of photography in the theatre will not be diminished.

There will remain only the inevitable and, in colour, more obvious, modifications which the photomechanical processes bring. The 'controls' exercised in reproduction, as even a cursory investigation will show, can bring about at least as much alteration of the final effect as any trick open to the photographer. In magazine reproduction, this phase will be largely beyond his sphere of influence. In this connection, it is amusing to note that when really high quality four-colour blocks are required, so much of the 'fine etcher's' local handwork is necessary that certain craftsmen, more sensitive than their kind, prefer to

work entirely from a black-and-white original, introducing the colour by selective etching. Working to the colour original under the direction of the photographer, I have known them to achieve the finest results without the least loss of photographic quality. For stage work, be the demand great or small, the prevalence of colour photography will await the day when suitable materials are available. These must offer the essential qualities of speedy processing, amenability to control of tint and tone, facility of retouching, speedy printing at economical cost, and permanence. Meanwhile, let not the enthusiast be downcast. We still have our long winter evenings and few of us can be so vainglorious as to claim complete mastery of black-and-white.

Control in Colour Photography

BY WILLIAM J. PILKINGTON, AIBP, FRPS

A GOOD colour photograph tells its story as lucidly as a good painting, but it *never looks like a painting*. To this end, some of the tricks utilized by painters are of equal use to photographers in colour, whilst again, many of the usual dodges resorted to by photographers in monochrome are without significance when working in colour. Of primary importance in monochrome photography is the matter of key. A picture which, when printed normally, may be quite unassuming, can easily become interesting to a degree if printed down several tones. This control is not easily applied in the case of colour; partly because, in the case of colour transparencies there is no part of the process analogous with monochrome printing, and partly because changes in key brought about by printing down the part images of a colour print result also in a change of colour saturation which may completely alter the character of the picture. Shading, of course, is impossible with colour transparencies, but may be used for colour printing provided that the colour balance is not upset by the process. The remarks about change of saturation apply equally in the case of shaded portions of a colour print. In general, the key of a colour photograph is fixed at the time of camera exposure—a radical change of procedure as compared with black-and-white. Colour masses must be grouped with reference to both size and intensity; e.g., where a contrasting colour is included for the sake of enhancing a particular effect, it will need to become smaller as its hue becomes more saturated.

The Use of Colour

Before proceeding to a more detailed account of the methods by which control can be applied to colour photography, it might be valuable to consider briefly

some aspects of the *use* of colour. It is often alleged — and sometimes with truth — that the trouble with colour photography is that it is far too easy to use much too much of it! Certain it is that first attempts frequently exhibit the photographer's determination to get his money's-worth, and resemble more nearly the palette than the canvas of the painter. In passing, it might be observed that a colour photograph of the former offers one of the few occasions when the indiscriminate use of colour passes unnoticed, and is therefore a useful article for test purposes. But for serious work it should be remembered that the more restrained the colour, the more telling the effect, in much the same way that a musical passage, by virtue of being played at a proper level, provides thereby the means by which passages *piano* and *fortissimo* may be given effect by contrast.

The Problem of 'Colour Key'

Apart from the matter of 'key' — the level of the photograph in monochrome — and simple 'contrast', by which is usually meant subject brightness range, the worker in colour is faced with the problem of 'colour key', i.e., the predominant hue of his picture, and 'colour contrast' by which is meant the extent to which his colours are allowed — for want of a better word — to clash. As an easily imagined case may be cited the conventional evening scene. Of the hundreds of black-and-white pictures of such a subject, it would be safe to say that they all attempt to convey the impression of quietude: 'The curfew tolls the knell of parting day . . .' etc., and for this purpose extremes both of key and of contrast are avoided. Pearly greys, only subtly differentiated from each other, are the chief substance of the effect. Print the same negative on more contrasty paper, and you have set back the clock some hours; lower the key at the same time, and you have a storm. And with colour? The same rules for 'key' and 'contrast' remain; the same pearly softness is required; the greys are still there, but now they are slightly tinged with purple; a thousand shades, all different, but almost imperceptibly so. But let the colour key go red (and this it will happily do of its own accord, unless preventive measures are taken) and a suitable caption for the picture would be 'The Gods Roasting Chestnuts on Mount Olympus'.

A Measure of Technical Excellence

It has been said that a measure of the technical excellence of a colour system is its ability to reproduce a monochrome picture in monochrome. It should be added that more workers should put their colour materials to this test; for having once produced grey they will not willingly abandon it for all the colours of the rainbow.

And it is here that the matter of 'colour contrast' arises. Given a colour key predominantly grey, quite small masses of pure colour show up with telling effect; and, moreover, any of the six 'pure' colours can be used equally well. Apart from the fact that grey is itself very satisfying to look at, it also lessens the risk of those errors of taste so easily made when commencing with colour. On the other hand, when some other colour key is chosen, the insistence of this may be enhanced by the inclusion of *very small* amounts of pure complementary colour. Thus of two green materials of identical hue, the one may be made to appear brighter than the other merely by the inclusion of, say, a red plastic thimble, or a red button, in the course of arranging the photograph.

Three Ways to Alter Colour

Some of the difficulties in appreciating the problems of colour arise from the fact that, to the tyro, the possible variations seem endless. Perhaps it would help to remind the reader of the three possible ways in which a colour may be altered. Firstly, *kind* of colour is *hue*. It is a difference in hue which tells us that one colour is yellow and another is blue. Secondly, *strength* of colour is *saturation*. Thus, without change in hue, we may yet have a pale (desaturated) blue and a strong (saturated) one. And finally we have *luminosity*, by which is meant the extent by which the hue, saturated or desaturated as the case may be, is admixed with black (i.e., all strengths of grey, from off-white). This latter is not a formal definition, but rather is descriptive of the manner in which the effect of luminosity is obtained in a colour photograph.

For convenience, we can list a series of six colours which are of particular importance to colour photographers: yellow, magenta and cyan (these are the hues of the three layers of a tri-pack colour film, such as Kodachrome) and blue, green and red. The latter three can be produced by subtractive admixture of *two* only of the former three. (Cyan plus magenta making blue; cyan and yellow, green; yellow and magenta giving red.) The importance of this series lies in the fact that each colour is produced in the colour film by one layer only in the case of the first three, and by two layers only for the second three. As a result of this fact, luminosity can be higher for these than for any colour utilizing all three of the layers, and many of the problems associated with the production of separation negatives from colour transparencies are simplified when two printing colours only have to be considered. (Actually, when synthesizing a hue by means of three colours only — the usual procedure with all systems of colour photography — the addition of the third colour always adds black to the final result, and luminosity is thus lowered. With hues composed of any two printing colours, luminosity should not be lowered, given

theoretically perfect colouring matter. But since all the dyes and pigments used in commercial colour processes fall far short of the theoretical requirements, some black is introduced even when utilizing pairs only of the printing colours.)

Thus, the colours which yield the most blatant effects are saturated yellow, magenta and cyan; equally saturated blues, greens and reds, by virtue of the addition of small quantities of black, appear less strident; whilst the 'broken' colours — those synthesized by any pair, plus some lesser proportion of the remaining third printing colour, are usually the most pleasing. As a very general rule, large colour masses should be used only when they consist of an appreciable proportion of all three printing colours, leaving those hues which are produced by admixture of two only, or without any admixture at all (yellow, magenta and cyan) as very small masses. When, as sometimes happens, it is desired to give an effect of increased luminosity to a colour mass whose hue is composed of a mixture of all three printing colours (i.e. an appreciable quantity of black is inherently present) the photographer must resort to optical deception, increasing the lighting contrast to produce the desired illusion. As an example, a rich plum-coloured material, photographed in flat light might appear plum-colour, but not rich; a suitable epithet might be 'muddy'. But introduce relatively strong modelling light, giving deep shadows reproducing as a warm black, and the effect is completely changed; for while the actual reproduced hue of the material remains as before, the comparison of this, against the shadows, produces an effect which is much more *luminous*.

Colour Contrast

On the matter of colour contrast, most readers will be aware that the second series of three hues previously mentioned — viz. blue, green and red, have as their complementaries the first three — yellow, magenta and cyan. (The term 'complementary' might be vulgarly described as 'opposite', for a pair of colours are said to be complementary when each consists of a wave-band or bands of the spectrum of white light in which the other is deficient; so that by projection through two lanterns on to one screen the sum total would add up to white; or by overprinting, as in a subtractive colour transparency, or a colour print on paper, the net result would be black.) When printed side-by-side they provide the greatest shock possible of achievement by means of colour. To return to our musical analogy, they are equivalent to jumping on the keyboard with both feet. To appreciate why the effect should be greater than that of putting a saturated colour adjacent to white, it is necessary to recall that white is an equal admixture of the three thirds of the visible spectrum. By additive thesis, when we perceive white we are really seeing primary blue, green and red

simultaneously. And if we print our nearest approach to this primary red — a mixture of magenta over yellow — on to white paper, then we are really seeing, for the white paper, white minus nothing; and for the red, white minus cyan (cyan is the complementary of red; the colour in which red is deficient). The optical system is conscious merely of the fact that our coloured patch — the red — has some wavebands missing, as compared with the white. But there is still something in common; both white and red are reflecting red light. However, if we now surround the red patch with bright green, we remove this common denominator; the red patch reflects red light *only*; the green reflects *no* red light. Saturation and luminosity being high enough, the effect is sufficient to hurt, physically.

In choosing our colour composition it is obviously essential to remember this, for the expression 'liking till it hurts' has no place in the present context.

To the newcomer to colour photography, these remarks may help to indicate just how much more there is to colour, than buying the material.

Cameras and Associated Equipment

Generally speaking, it is not necessary to buy special equipment in the way of cameras, although some extra precautions should be taken with existing gear. Those who may be contemplating processing their own colour film, or who propose to make colour prints on paper, will be well advised to spend both time and money upon reorganization of their dark-room facilities. A working plan should be decided upon before commencing work; if possible a specific system of colour photography should be chosen and adhered to, rather than attempting to use any and every method which presents itself. Apart from the question of supplies the basic consideration is that of the purpose to which the finished colour photograph will be put. Where projection is the ultimate means of presentation, 35mm colour transparencies have much to recommend them; costs per exposure are low, and the relatively slow emulsion speed is offset against the larger apertures which may be used with lenses of short focal length. If, however, the transparencies are intended as originals for colour print making, via separation negatives, much difficulty will be avoided by making the minimum film size 2½ in. square. In the writer's experience, the practical difficulties of making and applying corrective masks become excessive in smaller sizes. Despite much that is said to the contrary, the same objections are valid in the case of half-tone blocks for photomechanical printing. To give the best engraving house a 35mm colour transparency for block-making is, to say the least, asking for a result inferior to that which could be expected from a larger original. The guiding principle should be: Use the largest size colour film that you can

handle; and remember that a great bulk of commercial and advertising colour photography is shot on sizes between half-plate and 8 by 10. And this is not done for the fun of it.

Direct Separation Negatives

For still-life work in the studio, and where the result is to be a colour print on paper, there is no method better than direct separation negatives, and these, of course, can be made in the conventional camera, with successive exposures, through the tri-colour filters. Properly made, such a set will yield a better print than when the negatives are separated from a colour transparency. If a colour record is required for comparison whilst making the colour print, then it is preferable to expose a small colour transparency, as well as the separation set.

Initiated readers will have anticipated that the next logical point for discussion is that of the one-shot camera. This is nearly as controversial a subject as that of 'Is photography Art?' The best that can be said of the one-shot is that, like every other system, it is not foolproof. It affords the only available method of obtaining direct separation negatives of subjects liable to move, or moving. The negatives so obtained really will 'fir' (will be of identical size, so that the resultant colour print shows no colour fringing). The colour balance of the negatives is by no means automatic, and the quality attainable is not necessarily higher than that which could be produced from a carefully separated colour transparency. This really means that it all depends upon the skill of the photographer, in both cases. Where a thorough knowledge of masking methods is brought to bear, a colour transparency can be well reproduced as a print on paper; but masking is difficult. Where the processing of one-shot negatives is slipshod, the resultant colour print will naturally be poor. The speed of a modern one-shot is not in excess of the speed of a typical transparency material. Largely, it is a matter of choice. Undoubtedly, the easiest way of making negatives for paper printing is that of successive exposures in a conventional camera. Where, for various reasons, this is impossible, the intelligent choice depends upon the direction in which the photographer wishes to direct his studies. If toward masking, the colour transparency; otherwise, the one-shot.

Control Starts with Separation Negatives

It cannot be over-emphasized that separation negative making, by whatever method, calls for a higher degree of skill than is possessed by many very competent workers in monochrome. Control starts here, so far as colour prints are concerned. Where separation negatives are being used, avoid very small

negatives. $\frac{1}{4}$ -plate should be regarded as the lower limit, and $\frac{1}{2}$ -plate, or 5 by 7, is ideal.

On camera equipment, then, a summary might be made as follows.

FOR TRANSPARENCIES WITH PROJECTION AS THE MEANS OF PRESENTATION.

35 mm or 2 $\frac{1}{4}$ in. square cameras are ideal. Cameras in these sizes are generally quite suitable without any special precautions being taken.

FOR COLOUR TRANSPARENCIES AS ORIGINALS FOR PRESENTATION AS COLOUR PRINTS ON PAPER, OR MASS PRINTED FROM BLOCKS.

The largest size conveniently available to the photographer. Use existing large-size cameras; ensure that lenses are fully colour corrected; shutter speeds known (tested and recalibrated if necessary). Really efficient lens hoods provided and possible causes of internal reflections removed. This should not be taken for granted; small amounts of scatter pass unnoticed in black-and-white negatives; this is not true of colour transparencies or of separation negatives.

FOR COLOUR PRINTS ON PAPER.

For still-life, use large-size equipment as above, with added precaution of testing dark-slides for register.

For living models, use large-size colour transparencies, or one-shot camera.

Lighting Control

So much for cameras. There are, however, some important points to be remembered on the studio side. Principal of these is that of lighting control. Unlike black-and-white, the quality as well as the quantity of light is critical.

In other words, the colour of the light is vitally important. Much is said, but too often little is understood about this problem. It is not difficult to grasp, and the troubles which arise can usually be attributed to the fact that a mystery has been made of the term 'colour temperature', just as in monochrome photography the expression 'gamma' has become a shibboleth instead of a scientific expression denoting a ratio.

The simple facts are that the light loosely termed 'white' appears so because it consists of all the colours in the visible spectrum, added together. (Often it contains also some invisible light, such as ultra-violet or infra-red: and although the eye cannot perceive it, the photographic emulsion may do so, with surprising results).

For practical purposes, it has been found possible to group the various wave-lengths into three broad bands, each of which gives the visual hue of

red, green and blue respectively, and it is further assumed that these are present in white light in more or less equal amounts. However, the actual proportions can (and do!) vary very considerably for different samples of 'white' light, and, moreover, the eye is quite incapable of analysing the sample before it; it is the most accommodating sense we possess. But a colour film, consisting as it does, of three light-sensitive layers, each of which responds to one of the 'thirds' of white light, to give a set of mutually balanced negatives when exposed for a time common to all three layers, requires that the proportions of the 'thirds' conform to a particular specification. This is quite reasonable, as may be shown by taking as an analogy three black-and-white emulsions but of varying speeds. Using such films, and in order to get similarly exposed negatives in all three cases, we should need to alter the *intensity* of the light on the subject for each negative, or, the light remaining constant, it would be necessary to vary the exposure *duration*. When we come to colour film, or colour sensitive plates, where, in either case it is arranged that each emulsion is sensitive only to a particular third of the spectrum, it follows that the intensity of each third must be just sufficient to give mutually balanced results, if we are to be able to give a common exposure time to all three emulsions (as we *must* do in the case of colour film). The proportions of red, green and blue light comprising our 'white' must be just those decided upon by the manufacturer when he designed the colour film. When this state of affairs does not exist, we say our result is 'out of balance' and the practical proof of the statement lies in the fact that our colour transparency has a colour cast—an overall tint of unwanted colour, showing that one or more thirds of our white light was excessive, or insufficient in relation to the others. This is just as true of panchromatic plates used in making separation negatives of still-life subjects, as it is of colour film, but with this difference: with the latter technique one common exposure is given to all three emulsions simultaneously; for the former, the exposures are progressive, and each is made through a tri-colour filter. In this case, it is the filters which, in conjunction with the spectral sensitivity of the brand of plates being used, decide the effective composition of our white light. Our light acts as though it were 'white' only when we apply certain filter factors to each of the three filters. If we alter the composition of the light, we must alter our filter factors accordingly; otherwise our separation negatives will give a colour print also showing a colour cast.

The problem therefore becomes that of defining the composition of our white light, and finding means both of expressing it, and of checking that our own lights conform to the desired specification. It would be very difficult to express, say, the quantities of red, green and blue light, as ratios, in a given

white light, and it is fortunate for us that much simpler means exist. The method generally used is based upon Planck's radiation law, an important feature of which is that the colour distribution of the light emitted by an incandescent material (such as a tungsten filament when an electric current is passing through it) is dependent upon the temperature to which the filament is raised. This means that not only is *more* light given as the voltage is increased, but that the ratio of red, green and blue comprising the 'white' light is also altered. Another law, the displacement law of Wien, states that the wave-length corresponding to maximum intensity (i.e. the particular part of the spectrum which gives the most light, whether this be blue, green or red) is inversely proportional to the temperature. (This is expressed in the 'absolute' scale; or Centigrade, plus 273°). Thus, as the temperature increases, the predominant wave-length decreases, and the light gets bluer. For a tungsten lamp running at 2,800° Kelvin (the more usual name for the absolute scale) the maximum light would be well in the red end of the spectrum; possibly 9,000 Å.U. But typical sunlight, whose temperature is of the order of 5,600°K (twice the temperature) would give its maximum light at 4,500 Å.U. (half the wave-length). Reference to a conventional spectrogram calibrated in Angstrom units will show that this latter wave-length is well into the blue region.

Measuring Colour Temperature

Another useful observation in connection with this matter was that, for most practical purposes, a knowledge of the ratio of red to blue light was sufficient to identify the particular sample of 'white' light under consideration, and recently some meters have been designed in which a photo-electric cell measures 'white' light first through a red, followed by a blue filter, and the differences in reading, representing the ratio of these two components, is read off in degrees Kelvin—the colour temperature. In expressing the answer in this manner, possible ambiguities are avoided; for it is much easier to say 'This light has a spectral composition equivalent to that of an ideal radiator raised to such a temperature than to state that it consisted of $x\%$ red $y\%$ green and $z\%$ blue.

In applying colour temperatures in practical work there are a few precautions to be observed. Firstly, the conception of a light showing a predominant wave-band, shifting along the spectrum from red to blue as the temperature is increased, implies that all the wavelengths constituting white light are present in the light source; only the ratios alter. But if the light is deficient in some (even small) bands, then the statement does not hold. The latter case is met with in some types of discharge tubes, the 'white' light being made up of a series of well-defined, narrow bands; and although the light may appear white

enough to the eye, there may in fact be spectral regions emitting no light at all. Such light sources are termed 'discrete' as distinct from 'continuous' ones: measurements in terms of colour temperature cannot therefore be made, since by definition the system is invalid.

Modifications by Use of Filters

In the case of continuous sources the effective colour temperature may be modified by the use of filters on the camera lens (or over the lamps themselves) by absorbing some of the blue light, thus lowering the colour temperature; or the red component, effectively to increase it. It should be noted in passing, that this method of modifying the light always decreases the actual *intensity*; it alters the ratio of red, green and blue, by lowering one or two components in relation to the unabsorbed remainder. But with discrete sources there are always, literally, some black gaps in the spectrum; given wave-lengths for which no light is being emitted by the source: consequently, no possible filter combination can compensate for the deficiency. It is not possible to *add* a colour to the spectrum by means of a filter. (The term 'filter' should itself make this statement clear, and indeed, the writer would feel guilty about making so obvious a remark, were it not for the fact that, by inference or direct statement, he has so often heard this belief expressed). All that can be done is to modify the light emitted by a given source; and if this be continuous, selective absorption can result in a shift in the peak corresponding to some other colour temperature. But that is all.

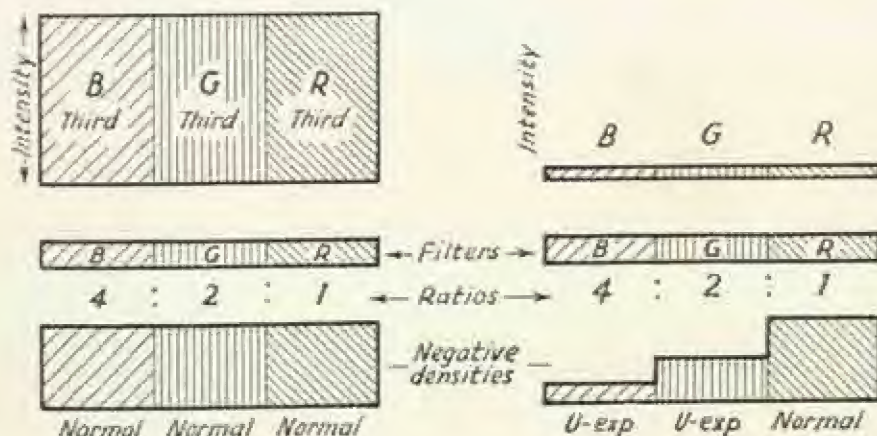
Voltage Control

Thirdly, the effective colour temperature of a tungsten lamp can, of course, be altered by variations in the voltage applied: this is the method used to make the 'Photoflood' lamp more actinic, for being overrun, its filament is raised to a far higher temperature than it can tolerate, and in accordance with Wien's law the maximum intensity occurs toward the blue end of the spectrum, where it increases the 'speed' of the negative material, in the case of monochrome photography. It is sometimes suggested that voltage control should therefore be provided, so that lamps may be adjusted to yield light of a given colour temperature. But this is not a simple matter, for the dictates of Ohm's law are such that a separate resistor would be needed for each lamp, or, at best for each bank of lamps of common wattage, and even then the switching off of any one or more lamps would necessitate the readjustment of the resistors of the remainder. What can be done — if expense is no object! — is to provide that the voltage remains constant, at some arbitrary figure, and then adjust the effective

DIFFERENTIAL RECIPROCITY-LAW FAILURE

LIGHT INTENSITY
SUCH THAT 1 SEC.
EXPOSURE REQUIRED
AT GIVEN f / NUMBER.

LIGHT INTENSITY
SUCH THAT 100 SEC.
EXPOSURE REQUIRED
AT GIVEN f / NUMBER



Note how negative density varies with exposure duration. Although the same filter factors are given, the negative balance is not common at both 1 sec. and 100 secs. To restore balance in this example, filter factors might be adjusted from 4:2:1 for 1 sec. exposure to 16:8:1 for 100 secs. exposure.

EFFECTIVE SPEED OF AN EMULSION IS ALTERED WHEN
DURATION OF ITS EXPOSURE IS ALTERED

SCHEMATIC ONLY

colour temperature by the use of filters on the camera lens. In the writer's experience, this is by far the most satisfactory method.

Correct Exposure

When colour film is correctly exposed to light of colour temperature for which the colour film was sensitized, the resultant transparency will appear devoid of colour cast; a grey wedge, if included in the picture, will appear as grey. (This is not necessarily true of a colour print on paper, made from separation negatives); and in the absence of a colour temperature meter, a trial exposure should be made. A colour cast, if present, indicates an incorrect ratio of red, green and blue components, and can usually be corrected by the use of a compensating filter. (If too warm, a pale blue filter; if too cold, a pale amber is used). Suitable filters for this type of correction are supplied by Kodak as Colour Compensating filters, Nos. 82, 82A and 82B, and are pale blue, whilst the amber series for lowering the effective colour temperature are the Nos. 81, 81A and 81B. If it is suspected that one or more of the lamps are appreciably off-colour (they decrease their effective colour temperature as they age) then again a practical test on colour film may be made. Each lamp should be made to illuminate a separate piece of white newspaper, care being taken to ensure by means of screens that there is no spill-over of light from lamp to lamp, and the distance of each lamp to paper adjusted so that the intensity of the reflected light is common for all lamps. This can be measured by the use of an exposure meter. The exposure of the colour film should be sufficient just to record the paper as white, without any 'burning out' by over-exposure, and the printed matter should be black. Faulty lamps will be evidenced by a colour cast not common to them all.

Control by Correction Filters

It will be realized that the judicious use of correcting filters offers a means of modifying the colour key of a picture at will, so that where, for instance, a warm overall effect is required, the normal lighting, plus a warm filter, may be used. With practice, this may be extended to effects achieved by deliberate mixed lighting; thus with a warm filter at the lens, and *pale* blue filters over selected lamps, part of the result may be made warm, whilst those portions lit with the blue filtered light will appear as though lit with *white* light. (For these lamps the effective rise in colour temperature will have been offset against the warm filtration at the camera, to give normal rendition, whilst the unfiltered lamps will, of course, have undergone a reduction of effective colour temperature). This method is the principal means of modifying the colour of the

transparency; it is as important as the matter of lighting contrast in black-and-white, and is more difficult to apply.

Shift in Colour Balance

Whilst on this subject, there is another difference in technique to be observed in lighting for colour: the matter of overall intensity. In monochrome photography, the lighting level is relatively unimportant. A given lighting arrangement may be duplicated with lights whose intensity is, say one-tenth, or ten times that of the original set-up; provided that the relative distances are maintained so that the subject brightness range remains constant, virtually identical results will be obtained, and also provided that the exposure times provide the reciprocal: ten seconds or one-tenth second, instead of one second, for example. This is not true of colour photography, either in the case of transparency materials or of separation negatives made conventionally or in the one-shot. Exposure durations are variable within fairly narrow limits and any liberties taken will result in a *shift in colour balance*. In general, low lighting intensities, with relatively long exposures will yield a blue cast. Shortened exposures (in the rare cases when such can be given) may lead to a deficiency of blue. These effects may be anticipated, and correction filters used, but no detailed information is practicable, since the extent of the effects will depend upon the nature of the colour material used. Practical tests, of the kind suggested for checking colour temperature, may be made and adjustments effected empirically. (In fairness to the one-shot camera, it must be stated that this method of effecting the exposure — i.e., *constant time to 3 identical emulsions* is least liable to give rise to trouble in this respect).

Importance of Colour Temperature as a Control

The importance of colour temperature, and of correction filters cannot be overstressed, since this constitutes the conjoint means by which basic control is applied. Away from the studio, control of this nature is far more difficult. With daylight, particularly, the use of correction filters must in general be confined to one only, chosen by practical test, to correct any predominant hue which may be caused by slight lack of balance in the batch of film being used: not infrequently, daylight colour film gives a result slightly too blue, and a filter such as a No. 81 can be fitted and forgotten. Only when working in the early morning, or late evening, or, in the case of technical difficulties necessitating long exposures, should any attempt be made to correct apparent abnormalities in the light. Remember that in the case of evening light, the correction (use of pale blue filter) should not be sufficient to restore the effective colour tempera-

ture to that of mean noon sunlight; but enough only to avoid the resultant colour photograph appearing excessively red. The colour key must be warm, or the picture will appear false. (This is an example of where the colour temperature meter cannot be used successfully, for it can do one or both of the following operations only; indicate the prevailing colour temperature, and—in the case of some meters only—indicate also the necessary correction filter. But this would be full correction, making the finished transparency appear as though photographed in noon sun).

Use of Flash Bulbs

Flash bulbs may be used with great advantage, either to strengthen the directional lighting, or to provide fill-in light, but these must be of the daylight type, with blue coating. Here again care must be exercised, since the colour of the bulbs will remain constant, and will consequently exaggerate by contrast the effect of evening light. Filtration at the camera will not help, since this will offer partial compensation for one light source only (say, the evening daylight, appearing red) by raising the effective colour temperature by means of a blue filter. The daylight blue flash bulbs will also have their effective colour temperature raised, making them bluer still, and the net error will remain a constant. Under these circumstances it might be found that the colour temperature of the evening light approached very nearly that of a regular (clear) flash bulb; and this being the case its effective colour temperature, together with that of the natural light, could be raised together by the use of a blue filter on the lens.

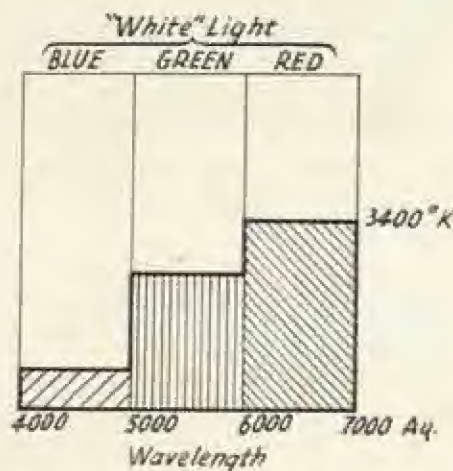
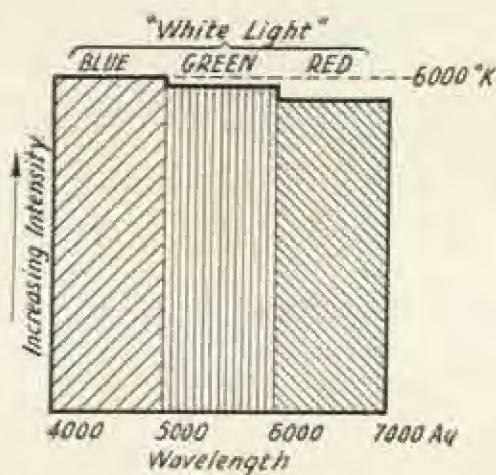
A particularly difficult problem arises when it is desired to photograph an interior, including a window. Here, the daylight entering the room calls for similar quality in the artificial light. There are two alternatives: blue flash bulbs may be used, in which case the exposure must be calculated in terms of number of bulbs and f No., and an auxiliary exposure made to allow the natural light to record. (Otherwise, from the great intensity of the flash, used in this instance as the main light source, and the short exposure duration, the window will be under-exposed). The alternative method is to use tungsten lighting and to raise the effective colour temperature by filtering these lamps with theatrical gelatine filters. Here, the internal and external intensities may be balanced before the exposure is made. A suitable filter for the purpose is that sold by the Strand Electric Co. as 'Steel blue'.

Types of Colour Film

Under these peculiar conditions, the question may arise as to the type of colour film best suited to the job: whether tungsten or daylight stock. In practice there

DAYLIGHT

TUNGSTEN

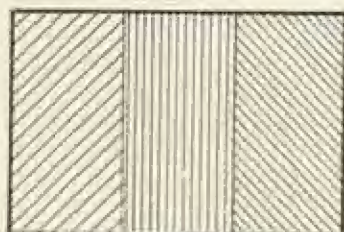


SCHEMATIC REPRESENTATION OF THE CHANGE
IN THE COMPOSITION OF 'WHITE' LIGHT WITH
DIFFERING COLOUR TEMPERATURE

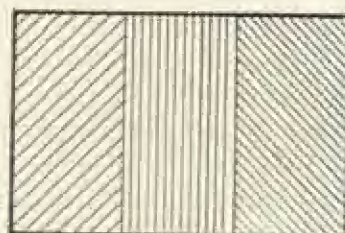
Note the inverse proportion between wavelength and temperature for maximum intensity.

DAYLIGHT

TUNGSTEN



Negative Density



Negative Density

Note how factors are adjusted reciprocally to allow for deficiencies in any third of the spectrum, to yield common densities in all negs.

is little to choose between them. Either the daylight type is used unfiltered at the camera, or tungsten type with daylight correction filter such as Wratten 85B. In either case, the problem is identical with that of the evening light previously mentioned: make the light sources common, by filtering one in relation to the other, and then filtering at the camera to bring *all* the light in balance for the film in use. Thus, in the example of the interior, shot on tungsten type film, the reasoning would be: daylight, through the window, unfiltered. Tungsten light, filtered to effective colour temperature of daylight, by use of steel blue gelatine. All light now being effectively constant, Wratten 85B filter on camera converts tungsten film for daylight use.

This reasoning is valid also for one-shot cameras, where the lighting is mixed and/or of different colour temperature from that for which the camera is balanced. For separation negatives made with a conventional camera, the light sources should be also brought to a common balance, and then the exposures modified by applying the filter factors appropriate to that light source. In general, prior tests should be made to ascertain suitable factors for tungsten and for daylight, when the plates are developed for a chosen gamma, and such factors should be applied, even where meter readings indicate appreciable deviations in colour temperature.

Modifying the Negatives

The resultant negatives will exhibit density differences which can be corrected in the printing stage of the colour print making; but these errors are likely to be less embarrassing than those which would arise if attempts were made to estimate (actually, guess!) the required corrections to the filter factors. Attempts to further modify the negatives by adjusting the relative development times is a certain precursor to failure. This means that the precise filter factors (governing density) are relatively unimportant, whereas the development times, which control contrast, are all-important. That there should be any difference between separation negatives and transparency processes is explained by the fact that in the latter there is no control analogous with that provided by variable printing times for the three part images of the colour print.

Colour Temperature Correction Filter

However, for the fastidious, there is no reason why a colour temperature correction filter should not first be fitted to the camera lens, where necessary, to bring the light to the colour temperature of that in which the filter factor tests were made, and then adding each of the three analysis filters in turn when making the exposures. To complete the example, for the case of the interior photographed by

mixed lighting, and using a conventional camera for separation negatives, the position would be:

Daylight, through window.

Tungsten, filtered with steel blues, to approximate daylight.

Colour temperature meter reading indicating that light, substantially common at both sources, is higher than that of the prevailing daylight at the time filter factor tests were made.

Pale amber compensating filter on lens, to reduce effective colour temperature.

Plates exposed successively through the tri-colour filters, using the factors derived by test.

This should result in a balanced set of negatives, provided the relative development times are adhered to. Without the colour temperature correction filter, the separation set would still be quite suitable, but the blue-filter (yellow printer) negative would be slightly over-exposed. As explained, corrective measures would consist of increasing the printing exposure time for this negative.

Avoiding Density Discrepancies

Another method of avoiding density discrepancies for the example quoted, would be to decrease the filter factor for the blue filter exposure. Throughout the foregoing description, general recommendations only have been made. The reason for this is that precise instructions will relate only to specific systems and materials. Thus, whilst a meter reading may prove that a light source is too high or too low for the material in use, and an amber or blue filter respectively be used to correct the colour temperature, the sum of the correction achieved will depend upon the actual colour distribution of the light source(s), the absorption of the correcting filters, and the colour sensitivity of the photographic material.

Control by Practical Tests

These factors can be precisely related only in the laboratory of the photographic manufacturer; but the *direction* of the required correction can be assessed by means of a colour temperature meter, or, in blatant cases, by visual inspection, to a first approximation. The danger of the latter method lies in the fact that visual and photographic colour sensitivity are totally different, and, moreover, this is particularly true of the blue end of the spectrum, where the emulsion is much more sensitive than the eye. Practical tests throughout are the only safe guide, and these must be made. That the majority of photographers find such work irksome is unfortunate, but there is no short cut. This is the stuff and substance of control in colour photography; it is one of the reasons why prices of professional colour photography are high. It is also an important reason for

choosing and adhering to a particular system of colour photography (since the accumulated experience of one will provide qualitative but not *quantitative* information concerning another). And this is inherent, fundamental, in any process utilizing the trichromatic thesis; it has nothing to do with the 'perfection' of the photographic product. Granted that, used under average conditions, correctly exposed and processed, any button-presser can obtain a pleasant colour transparency; but he *cannot predict the result* unless he understands not only the principles of subject lighting, as in black-and-white photography, but something also of the principles governing the control of the spectral distribution of his light. You don't always get what you see. Try it, and see what you get!

Secondary Controls

Compared with this matter of lighting, most of the other factors governing control in colour photography are of secondary importance, in the case of colour transparency systems. With colour prints on paper, of course, something approaching the freedom of the control of the bromide print in monochrome is attained. However, so far as concerns the operator, a *complete mastery* of lighting technique for colour is the key to success. Of the other factors demanding his attention, exposure and make-up follow on, in that order. Of exposure, it must be said that again tests should be made, since the speed and colour balance of colour film varies a little from batch-to-batch. No alternative is offered, if the resultant work is to attain a high creative standard. This is one of the major differences between colour and black-and-white. The man who can't be bothered (too busy!) will be perpetually saying: 'Of course, it is a *trifle* thin, but I think it improves the appearance.' Or: 'I am afraid that it is a little too warm, I can't think why.' The less scrupulous will boldly aver that their results are 'just what they wanted' which very often means that they couldn't have said just what that was until they saw the result!

There is no answer to such people; if their luck holds, they will get away with anything. But these comments on procedure are intended for workers who wish to exercise complete mastery over their medium; and in the long run the consistency of their work will bring its own reward.

Exposure Tests

Exposure tests, then, are best made on a figure holding a large greyscale. The chosen system of make-up should have been applied, and the photographer's preferred method of exposure determination used. This data should be tabulated *before processing*. It is a good plan to arrange that all types of test be made at the same time, since this saves a great deal of repetition. When first trying out a

colour transparency material, it is useful to expose both without filter, and with one each of the colour temperature correction filters, since then there will be available several variations in colour key of the test subject. The conditions which gave a neutral result — grey scale grey, and colour-for-colour facsimilarity — should be used where straightforward results are wanted, whilst the net effect of any filter in altering the colour key will also be known. To get a real impression of the possibilities, one exposure should be made through a brightly coloured filter, say a green, and the result carefully studied.

Modification of Colour Prints

Colour prints on paper, whilst subject to much that has been said in connection with transparency materials, can be further modified in the processing stage. The means at the photographer's command are those of shading-in, as in black-and-white, and adjustment of the relative weights of the three part images. The former demands considerable printing skill, since each part print may need modification.

As a typical example may be cited the darkening of the corners of a background in portrait photography. Such vignetted shading can be applied to the colour print, and it may be assumed for our purpose that the effect is intended to be equal for all three part images. But almost certainly these images will have had differing exposures; then the extent of the shading must be proportional to the main exposure in each case.

Method of Shading

The easiest way to visualize the requirement is to express it in terms of a percentage of the main exposure; thus the desired shading may be 10 per cent. to 50 per cent. graduated shading in each case. Let the main printing exposures have been: Yellow, 60 secs; Magenta, 50 secs.; Cyan, 70 secs. (Yes, if the negatives had been perfect, all the prints would have needed the same printing time. But there is no reason to suppose that *you* will get perfect negatives; nobody else does!). The shading exposures will then be: $60 \times 10/100 = 6$ secs., and $60 \times 50/100 = 30$ secs. The main exposure having been given, shading is commenced at the desired part, and after 6 secs. exposure graduated shading is continued, until the full 30 seconds is completed. By the same calculation, the shading times for the magenta and the cyan would be 5 secs. to 25 secs. and 7 secs. to 35 secs. respectively. Dodgers are not very useful devices for colour print shading; a better plan is to cut shading templates out of black paper, to the required shape. The writer always exposes his bromides for Carbro under plate glass (to ensure registration in the enlarger) and these templates can be laid over this, and moved to avoid edge effects.

It might be said in passing, that a few trials at such shading will convince the budding colour worker of the importance of correct lighting! But this type of printing control is in regular use with professional colour photographers. Sharply defined patches can, of course, be treated by all the usual methods of retouching at the negative stage, and in particular the application of grey varnish to the back of the plate, with subsequent scraping off for those parts not to be held back, is very useful. A very usual application for such a method is the treatment of greens in the magenta printer.

Meaning of 'Colour Correction'

Care should be taken to avoid confusion over this matter of 'colour correction' in separation negatives. Retouching, or printing-in, is usually confined to deliberate attempts to modify the picture, either because of faulty lighting technique, or errors in processing. Colour correction, on the other hand, has a totally different significance. A set of modern tricolour filters, and good panchromatic plates will yield a set of negatives virtually perfect. But these in turn will give a perfect print only with perfect printing colours. These latter do not exist; the dyes available, plus the carefully balanced emulsions of an integral tripack, usually yield a very pleasing result, but this is not always true of the print on paper. (In actual fact, insufficient care is given to matching the various contributory factors, such as spectral sensitivity of the plate; absorptions of the filters; relationship of negative gamma to that of the printing medium, and the reflection curve of the pigment paper). One usual cause of trouble lies in the faulty hues of the colour printing process. Generally the cyans are too red, and the magentas are too yellow.

Control by Masking

Considerable improvement can be effected by use of a masking system, such as that advocated by Murray, and issued in many forms by Kodak. Briefly, this consists of making light positive prints on film, by contact. Two should be made from the cyan printer and one from the magenta printer. When dry, one cyan positive is bound back in register with the cyan neg from which it was made; the other cyan positive is similarly bound up with the magenta printer, whilst that made from the magenta printer is bound up with the yellow. They act as follows: Wherever cyan is printed, some magenta is removed; wherever magenta is printed, yellow is removed. Hence, since the cyan colouring matter is already too red (acts as though some magenta and yellow were mixed with it) some real magenta is taken away at the magenta printing stage; and this is true also of the yellow.



STAGES IN PRODUCTION OF COLOUR PHOTOGRAPH USING DIRECT SEPARATION NEGATIVES

NOTE : The masks are thin positives, made from the negatives under which they are shown, and replaced on the negatives as indicated by the arrows.
One-shot negatives consist of two negatives laterally reversed, relative to the third negative.

SCHEMATIC ONLY

Notice that this method does not assume an imperfect negative; it creates one, to offset an imperfect set of inks. Actually, a cyan mask should also be placed on the yellow printer, making two masks there, but the mechanical difficulties are excessive. Because this correction is necessitated by errors of the printing colours it should be applied irrespective of the colours of the subject, and the extent of the 'masking,' once established for a particular process, should remain constant.

Control by Make-up

On the question of make-up, the last of the items by which control may be applied, the following points should be remembered: The guiding principle is that the natural skin texture should not be visible. Make-up must do what the pencil of the retoucher used to do for monochrome photography. (But it must do it a lot better!). There is no question of make-up being unnecessary in colour, for a colour photograph is virtually a colour blind, an ortho and a pan portrait all in one. The bags under the eyes are there; the creases are there, the crows-feet are there. And if you want these attributes in order to render skin texture, remember one other thing: The tiny blood-vessels in their hundreds are there, too — they show through the skin. For this reason the make-up, apart from its colour, must be photographically opaque. Whether it be by one maker or another is a matter of choice. Take a course in its application — and never let your model apply it herself, unless you know her to be proficient.

If there are to be any criticisms to the effect that too much time has been spent on generalisations, and too little on details, the writer must plead that throughout this book specialist writers have given of their knowledge to improve the methods of control in a specific field of monochrome photography, in the art and science of which there is no lack of accomplished exponents. The present-day position with colour photography, however, is such that many of these same readers are as yet unskilled in the use of the colour medium. It is in the hope that by stressing those aspects of the subject which need particular study and practice (especially where this differs from its monochrome equivalent) the writer may in some measure have cleared the ground, and thus presented a fairer view of what can constitute control in colour.

Control in the Darkroom

BY STUART BLACK, BA, FIBP, FRPS

LET me stress at the outset that I am a firm believer in results obtained by purely photographic methods—preferably without the need for subsequent modification by after-treatment. In practice, however, few photographers succeed in *consistently* producing negatives which, without any manipulation whatsoever, will give the best possible rendering of the objects before the camera at the time of the exposure. Even the strictest purist has to allow some measure of 'control' of this kind, whether in the form of occasional shading during printing, or modification to the negative by chemical means. Far from allowing prejudice to debar any or all such methods, I recognize that in the darkroom there is unlimited scope, not only for the correction of shortcomings, but also for experiment in new ways of creating effects.

Intensification and Reduction

Probably these two processes are the most commonly used controls in all photography, and the most uncertain! Over a period there are always times when something has gone wrong, and if only to avoid endless waste of time in making tricky prints, one is forced to consider doing something to the negative itself. I could, of course, start (and finish) this section with Mr. Punch's famous advice to those about to marry . . . 'don't!' Few would take the advice anyway, but in my experience one should think very hard and try all other methods before committing a really valuable negative to either process. Still there are times when it has to be done, and I can best tackle it by simply giving my own methods.

To take intensification first: don't forget that there are other methods, besides chemical baths, of altering the contrasts of negatives, and with an irreplaceable negative I should certainly try them first. Making a contact transparency on a

process film with minimum exposure and maximum development, and from it another negative, also by contact, is one of the simplest ways of increasing contrast, and it can be further increased if the second negative is made via a condenser enlarger. The converse is also just as easy, giving full exposure and shortened development to reduce the contrasts in both stages. Various modifications of these methods will occur to everyone, but the great thing about them is that, in the event of things going wrong, you still have the original negative intact.

In the case of the more usual chemical methods of tackling the imperfect negative, my ways are conditioned by the fact that I am essentially a lazy person, and am not specially interested in the chemistry of processes; so, although I think I have tried almost all the methods of both intensification and reduction, I have now reduced my solutions mainly to two: Chromium; and Potassium Ferricyanide. With these two I find that I can do practically all the things that any reasonable person should want to do to the poor, long-suffering negative.

First of all I should put in a word of warning, and a piece of advice: there is, as I have implied, always some danger in after-treatment of any negative, even in putting it into a dish of water, but most of the things that go wrong are due to two things, either inadequate fixing or inadequate washing; so the first thing to do, before starting any treatment proper, is to make sure that both have been properly done. My own practice before doing anything else is to re-fix for 10 minutes, any negative, in plain, 4 oz. to the pint, *fresh* hypo, and then to wash it for at least half an hour in running water. Then you can start.

I don't propose to give any of the standard formulæ, which can be got from any text-book, but I always use the ordinary two-solution Chromium intensifier, with the Pot. Bichromate solution in one bottle and the Hydrochloric Acid solution in another. With this you can ring the changes to your heart's content, remembering that more Bichromate and less acid will give greater intensification, and vice versa. To avoid the bother of yellow chromium stains, and to make it possible to repeat the process if it is not enough, you must wash until the yellow stain has gone. This means at least 15 minutes, so I find it worth while to put a few grains of Pot. Metabisulphite into a dish of water and put the negative into that. It immediately removes all the stain, and it doesn't matter if all the Pot. Met. has not dissolved. A brief rinse, and re-development in any ordinary M.Q. developer for at least 10 minutes follow; then another short wash and drying. I find if necessary this can be repeated about three times, but after that one always seems to get stain and often unevenness. If the negative is taken, after bleaching and before re-developing, into bright daylight or even direct sun, the intensification is increased considerably. By the way, in my experience it is

quite useless to try to intensify the shadows more than the highlights by stopping the bleaching short of finality, i.e., by allowing some of the blackest deposit at the back of the negative to remain unbleached . . . it never seems to work, though I have never seen why it shouldn't.

Re-halogenising is a very useful trick with Chromium, for softening harsh contrasts, and although it would seem to be the complement of not carrying bleaching to finality, yet it *does* work. In this method one bleaches completely, but re-develops in a very dilute developer, going on until there is a trace of 'whiteness' on the glass side in the densest parts. The negative is then plunged into hypo, and the undeveloped parts are fixed out. Again a word of warning: if you don't develop far enough you'll be left with a ghost, so it is better to go too far and do it over again; but remember that finality will mean an overall increase in density and contrast. It is best to try this out with waste negatives until you see how far to go. I use the Chromium and Hydrochloric solutions about 50 : 50, plus 100 parts of water for this.

With reduction, as with intensification, I have simplified my method to one basic formula: Ferricyanide and Hypo in one or other of its modifications. Used as Farmer's Reducer, (20 per cent. hypo solution with enough 10 per cent. Pot. Ferri. to make it a pale lemon-yellow), it acts as a slightly cutting reducer: i.e., it attacks the shadows first, and the more Ferri. there is the more it will increase contrasts; but if it is made too strong it tends to be very uneven and cause streaks. It increases the contrasts more on a dry negative than on one that has been soaked. If there is only a trace of Ferri. it works almost as a proportional reducer, but is slow, though even then, in my hands, it is not as slow as Amm. Persulphate, and much more certain. (*Never* use any acid fixer in association with Ferri., it is fatal). If used as a two-bath method it is quite proportional, and will reduce the overall density with little or no effect on the range of tones. For this I use a 1 per cent. bath of Ferri. for 2 minutes, followed by a 5 minute wash and immersion in plain hypo. This two-bath method can be used over and over again, but remember to wash out the hypo, or it becomes that 'cutting' Farmer's all over again.

Nowadays these are all the solutions I use for any after-treatment of negatives, and with them I find I can do all that is ever needed.

Local Modification of the Negative

There is often much that can be done to the negative by chemical means, without resorting to pencil, dye, or other forms of 'painter's technique,' which will still retain the fully photographic nature of the image. Local intensification and reduction are the things most often called for, but they have to be done with the

greatest possible care. It is much easier to do either or both on a print than on a negative, and in the event of failure it is nothing like so disastrous! In general, however, I do like to get a negative that will print without too much fiddling around, so I try to do what is needed once and for all. Quite frankly I have rarely succeeded in getting really satisfactory results with local intensification, which it nearly always shows its origin with either big jumps in density, or marks showing the outline of the work, so in practice I have more or less written this off, and my advice would be 'try it if you must, but . . .'

Local reduction is quite another story, and can be both useful and extremely effective, but bear in mind that, again, you **MUST** start with a fully fixed and completely washed negative.

For afterwork on negatives I use a simple piece of apparatus that any handyman can make up quite quickly: a deep box (mine is about a foot cube) with a 60 watt pearl bulb in a simple white reflector at the bottom; a sheet of plate glass, to reduce heat, and a sheet of opal, together at the top, with a mask about 3 in. by 4 in. to cut off extraneous light. Above this is suspended another 60 watt lamp, and the two are interconnected by a two-way switch, so that you can instantly change over from one to the other. I never try to work on a dry negative, and it is best to go right ahead from the final wash water, blotting off both sides of the negative with a viscose sponge. If it gets too dry, or worse, too warm, you must give it a rest, re-soak, and start again, but with a hardening fixer there should rarely be any trouble.

A *very weak* ferri-hypo solution used in a brush (without a metal ferrule) is applied with great care, and a wad of wet cotton wool is kept handy to swab off every now and then. Quite a lot of simple improvements can be done in this way, but when it comes to something more drastic I use another method altogether.

Two of the worst things a photographer gets up against in the way of contrasts are windows in interiors, and hands in portraiture. I know one ought so to arrange the lighting in the latter that the hands are sufficiently shaded, but it doesn't always happen; and I know that photofloods and flash and drawn curtains should cope with the former, but they don't; so for some years I have been using a technique for dealing with just these two things, that does seem to be a complete solution. I don't claim originality for it, but I haven't seen it given in any text-book.

Suppose an interior, correctly exposed except for the usual completely blocked window: somehow this must be so reduced that it will print equally with the surroundings. I have a small glass measure in which I put about $\frac{1}{4}$ oz. of 10 per cent. Pot. Ferri. solution and one small crystal of Pot. Bromide; and a not too small brush. With this latter fairly full, go over the window area of the DAMP



CONTRAST CONTROL. *Print showing right-hand window untouched, and left-hand one bleached and partially redeveloped and fixed. (See opposite page.)*

negative as carefully as possible, but, as will be seen later, there is no need to get unduly excited if you go over the edges here and there. Continue to apply the bleacher until the last trace of black in the required area has gone from the back. It will be found that generally quite a liberal amount of solution, quite a pool in fact, will be needed before the bleaching is complete, and it is almost inevitable that there will be some spread into the lighter parts. Next follows a very thorough wash of not less than 15 minutes, and redevelopment in a dilute M.Q. or Amidol developer, but don't whatever you do put it into any of the fine-grain solvent types or you'll never get it back. I use a dilution of about 1 : 10 instead of the usual 1 : 2.

From this stage on great care, judgment, and experience are needed, for it is akin to re-halogenising, and as Sherlock Holmes said 'the supreme test of the artist is knowing when to stop.' It should now be apparent why a little overlapping is not of vital importance, because the lighter parts build up and go on to finality in the dilute developer, long before the densest parts have got anywhere near their original depth. When quite sure that all the normal parts have got back to their proper density, and there is not too much bleached silver left at the back, the whole thing is re-fixed, and is usually improved out of all recognition, but, as with the other method, it is wiser to develop too far and have to do it again, than to lose all density in one go, and have a useless negative left.

It may be asked why not use the overall re-halogenising method? But that process tends to modify the whole negative in a way not required in these cases. In any event the Chromium is a marked intensifier, which Ferri/bromide is not, so the general values remain unchanged; and finally, in my hands it doesn't work! I use exactly the same technique with portraits in which the hands print too lightly in comparison with the face. In these cases reducing has every advantage over shading-down in the enlarger, as the shapes are usually intricate and very difficult to shade without being obvious, and moreover reduction retains all the modelling and tone values which are often either lost or falsified when printed down.

One or two points should be emphasized: there is no virtue in the very dilute developer as such, but its purpose is solely to allow sufficient control time, so that the image does not build up too quickly and bring you back to where you were at the start before you realize it. The bleaching solution tends to get exhausted quite quickly, and, even when there is a good pool of it, may stop acting altogether. If this happens, it pays to give it a quick wash off and start again, but don't try to swab it, as the odds are you will carry some to where it is not wanted and get most unpleasant marks. Once the limits of the action are delineated, it is surprising how large a pool the emulsion will carry without over-

lap. If you want to get rid of the pool of old solution without re-wetting the negative, use the corner of a torn bit of blotting-paper to mop it all up first, and then a nearly dry swab can be used with safety.

In nearly all cases it will be found that there is an outline of unbleached, or insufficiently bleached image around the treated area. It is best not to worry about this until the end, and then tackle it with a very fine brush, being careful just to 'help' the bleacher up to the edges. It can't do any more to the middle, for that has gone as far as it will, but in my experience it is far better, and easier, to do the final margins separately a bit at a time if necessary, than to try to do it all with one full brush.

As I said at the beginning, there is no need for alarm if you go slightly over the edges, though it should be avoided if possible, because, if the job is properly done, all but the very densest parts should have developed as much as they will, without any noticeable density change, long before it is time to fix out the unwanted part.

Many other applications of this method will occur to the ingenious, and I have found it of great value in removing some of those blatant highlights that occur in many otherwise excellent negatives.

I ought to have mentioned that the 'underground' light is of no value whatever for this last process, as you can only judge when the bleaching is complete from the back, as the transmitted light shows little variation. Also one must judge the amount of re-development from the back. In the case of film negatives, it is well to keep them in a hanger, so as to avoid damage by too much handling, for in any case it is a fairly rough treatment, and for that reason should be carried out as quickly as possible.

One last point: washing should be very thorough after the work is completed, both to get rid of the hypo, and what is even more important, to re-swell the gelatine evenly all over, remembering that parts of it have been kept wetter than the rest, to avoid drying unevenly.

Tone Control by Self Masking

Tone control can mean a great many things, from hand shading to double printing, but the method I am going to outline here is one in which the paper has been pre-soaked in developer, and exposed wet on the easel; the image, as it forms acting as a mask to prevent further exposure of the shadow parts, while the highlights are able to continue to build up.

Everyone knows the kind of negative, possibly a landscape taken late in the day against the light but with a fine sky, where the land portion is quite all right, but the sky is too dense to print easily. Ordinary shading, even with templates,

is complex and difficult, but this wet technique will often solve the problem easily.

Briefly there are two methods of working: in the first one the exposure for the shadow portions is first given; the lens is capped and development allowed to proceed. When a considerable density is reached, the lens is uncapped and the exposure for the highlights is made, after which development can be completed in a dish. In the other method a smaller stop, or a dimmer light, is chosen and both exposure and development continue concurrently, giving a sort of automatic masking. My own preference is for the first method, and I have had considerable success with it, but both are useful on occasions.

The most important thing is to make sure that you choose a paper that will not stain under the somewhat rough and unorthodox treatment, but most modern bromides will stand it, though chloros are neither as safe nor as suitable.

Having chosen a suitable bromide paper, make two sets of test strips, one for the shadow parts, and the other for the highlights. Both test strips must be developed to finality in normal, but particularly non-staining, developer (Amidol is perhaps best). Having chosen the correct exposures, the paper is put in the dish for *at least* two minutes, and kept face downwards to prevent danger of fogging and also of contact with the air, leading to oxidation. There is another reason for a full two or more minutes of soaking; to make sure that the paper has fully expanded as, if it has not, further expansion will happen on the easel and cause double image outlines.

Focusing of the image is done on either a sheet of glass, to save the easel becoming a wet mess, or a large *flat* dish; after which the wet paper is placed in position and swabbed off with a viscose sponge for obvious reasons.

The shorter exposure, for the shadows, is now given, and the lens is capped. It is my practice to cover the paper at this stage with a large shallow box, being careful that it neither touches the surface nor moves the paper, but makes sure that no fogging can take place. After about a minute, or a minute and a half, one can have a look, and if the image is well developed, proceed with the second exposure, remembering that it is the *difference* between the two exposures that has now to be given, and not the total time of the longer one!

At this stage one can help things out a bit by hand, by shading the darkened parts and not putting too much trust or strain on the masking.

The other method of concurrent exposure and development is exactly the same in theory, but in my experience is tedious, for the exposure has to be slowed down to several minutes to match up with the development of the image, and I have never got such good results that way, and there is much more danger of both fogging and staining.

In both methods, at the end of the total exposure time, the paper is taken from the easel and development completed in the dish in a perfectly normal manner.

There are, as always, certain snags to be guarded against: it will not work miracles, though it will give good prints from some types of negatives that are almost unprintable by other means, especially of the kind I have mentioned, or some that need just a bit of softening, but there are very decided limits. If the ratio of the two exposures is greater than 3 : 1 it is almost hopeless, as one often gets an unpleasant type of partial reversal, and generally I find that a range of 2 : 1 is about as far as one can go with certainty. Again, if hand shading is used as a help, it must be very carefully done, almost as carefully as if no mask were in action, or it will show very badly; but even here the fact of having a visual guide is enormously valuable.

Altogether it is one of the most valuable dodges in the photographer's repertoire, and many is the negative that it has saved from my dustbin, and more than one print done by this method has ended up in the exhibitions; but my advice would be to try it out on a range of negatives of varied types to see what it will and will not do, on fairly small sheets of paper, before embarking on 20 × 16's for the London Salon.

Unsharp Mask Technique

This method was, I believe, originally produced for control in making separation negatives for three-colour printing. It may have been known before, but I have not come on it in any of the older text-books. In tri-chrome printing it has proved necessary to equalize and balance the three negatives, but it has lately been used considerably in black-and-white work for alterations and improvements to the printing qualities of ordinary negatives, and I have used it quite a lot in this way myself. It is curious, however, that it is very little known, and when one mentions an 'unsharp mask' people think you have gone haywire, and haven't the faintest idea what is meant.

In monochrome work the method has one of two purposes: either it can be used to modify the tonal scale of the original negative, e.g., by softening the gradations partially or wholly; or it can be used to sharpen up prints from a slightly unsharp negative. I admit that to use an unsharp mask to make a negative sharper seems quite crazy, yet this is exactly what it does.

First of all let's see how the unsharp mask is made: the original offending negative is placed face down on a new bit of film or plate on the easel of a vertical enlarger, but separated from it by either a piece of clear celluloid, or two pieces, or even a cleaned glass plate. Experiment will show the amount of 'softness' (optical) that the subject requires. It is quite useless to employ the beam of the

enlarger as it is, or the result would be an almost sharp positive, so above the sandwich at about 2 in. distance there must be a sheet of ground-glass or tracing paper, or even ordinary typewriting paper on a sheet of glass, to ensure an even spread of light rather than anything that could approach a point source. My habit is to make two sets of trials, the first with no separation at all, merely to determine the exposure; and the second divided into three sections with different separations. For most work I find that one thickness of sheet film base which averages about .0005 in. is sufficient, or at most two sheets. Do not use roll-film base as it is much thinner, and the use of more than one piece of film introduces extra surfaces to carry dust, so that the ideal would be a sheet of really thin glass. I have found that a cleaned lantern plate is quite suitable for some subjects.

The choice of the right density and contrast is quite tricky, and depends on the original density and contrast of the negative, but it must be borne in mind that these two are *relative* to those of the negative, and in any case will reduce contrast in the result. If the second trial has been made on film, it is best to cut it up into its three sections, and apply each in turn to the appropriate part of the negative, so as to be able to choose the best one from which to make the final whole mask.

On making this trial application, two things will be at once apparent: the ease with which registration can be done, owing to the unsharpness of the mask; and the extraordinary increase in the apparent sharpness of the whole image, but, of course, at the expense of the overall contrasts. It is at once obvious that the final sandwich must be printed on a more contrasty grade of paper than that used for the original negative alone. If the original suffered only from excessive contrast so that a very soft paper was needed for a reasonable print, then it may be enough to choose a normal grade, but in most cases 'contrasty' is required.

It will be seen that there is enormous scope for experiment with this process: to begin with the degree of unsharpness chosen will give widely divergent effects, some most amusing; in the normal way the final printing must be done through the enlarger as the mask is usually placed IN FRONT of the negative thus preventing contact with the original image, but this can be reversed and the other position tried. Further variations can be made by making the density of the mask approach that of the negative, when it is possible to get very delicate high-key effects with dark outlines on suitable subjects. Yet another variant is to make a sharp contact positive of equivalent density to the original negative, and, using this positive as a starting point to begin all over again the other way round, by making unsharp NEGATIVE masks and combining them with a sharp positive. Even this is not final, for in the ordinary way this would result in a negative print, unless the densities of the two had been reversed, so one can then make a new

true negative from the sandwich, and print ultimately from that, with quite different results from any of the other ways.

Further modifications can be made chemically, and this is a method I have found extremely useful in portrait work. For instance one may have a portrait taken, say, out of doors, where the background is dark and quite appropriate, but there is too much contrast in the face, or even in parts of the face. One or two unsharp masks are made, which, if left as they are, would result in making the background far too light, while improving the face; so nothing is easier than to bleach out, with ferri-hypo, all the background parts from the positive mask. As all outlines are very soft, there is hardly any danger of spoiling outlines by going over edges. By doing this, the surroundings get, if anything, darker than they were before, in the final print, while the face gains in quality and modelling. With a little care one can effect tremendous improvements to all kinds of negatives by removal of unwanted parts chemically in either the one stage masking, or in the two-stage method, but the experimenter will soon find further ways for himself, and the beauty of the whole thing is that the result remains photographic in its final effect. In fact this curious increase in sharpness even tends to increase its 'photographicness'.

As to the scientific principles underlying the effects of this process, I am afraid I am not competent to give an explanation, but I understand that our conception or appreciation of 'sharpness' is in some way tied up with 'contrast' between two adjacent elements, and that, while we lose contrast in one way, we gain it in another, bearing in mind that for the final print we invariably need a much more contrasty paper than would have been needed for the original negative . . . and that's as far as I can go on the scientific side.

On the practical side, however, I would say that the process seems to me to offer one of the widest fields for experiment and control that photography has had for a very long time, and I shall be very surprised if it does not become one of the most generally used controls by both pictorialists and the commercial worker, as it offers them unlimited scope for modification, and even for saving things that seem to have gone irretrievably wrong.

'Neg-Pos' Methods

Probably this technique, which one is almost bound to shorten from its full and correct title, is one of the best known methods of messing about with a perfectly good negative, and there are probably few photographers, except plain button-pressers, who have not played with it from time to time.

Curiously enough it was first brought to my attention, more years ago than I care to remember, in a completely serious and important application. During

the first World War, I was, for a time, assisting with photographic and X-ray work at an American hospital established in England, and the chief Radiologist asked me if I had heard of the method, which he called 'bas-relief.' Of course it is not that, though it does give a pseudo effect of it. He told me he had used it a lot in radiography in the States, and was now going to try it in connection with war wounds, particularly those where fragments of shrapnel and bits of metal were known, or suspected to be present.

Just in case anyone who is reading these remarks does not know what the process is: in its simplest form it consists in making a contact transparency of equal density and contrast, from the original negative, and binding them together face to face with very slight lateral displacement. If they are exactly equal in value, when actually in register they should almost completely cancel out, but the lateral shift produces, of course, a dark outline on one side of each object, and a light one on the other, thus giving this pseudo-relief effect in the print.

In radiography, naturally, there is no need to make a print at all, as the effect is just as visible in the coupled transparencies, which is the way most radiologists are accustomed to view their results, and the fact that the effect is 'inside out' as it were, has rarely any significance for them. But the results from their angle can be very striking: the very first one I saw made a tiny bit of shrapnel stand out clearly, whereas in the single radiograph it could have passed as a flaw, or not even have been noticed at all. After that, if there was the slightest doubt, we always made one of these 'reliefs' which may have saved many a man's life.

The pictorial applications of the method have cropped up regularly in our exhibitions for many years, and I have been guilty of several myself. Often they give very interesting effects, quite different from the masking technique, which, by the way, cannot be used for this process . . . the positive transparency MUST be as sharp as the negative. Like the rest of these processes, it has an infinite variety both of methods and applications. If the positive is made of a different contrast or depth to its parent negative, part of the original tones can remain, or can even be reversed. The amount of shift, and the direction of it both make a great difference: in fact it always pays in pictorial work to try a test print with the lateral shift first to R. and then to L. and see which gives the more pleasing effect.

When some of the tones are allowed to remain, as for instance if the positive is much weaker than the negative, we begin to get an effect of tone-control, but in my hands this has rarely been a successful way of approaching it.

'NEG-POS' TECHNIQUE

Figure isolation, by positive mask in which figure is bleached out, and the whole combined with original negative.





'NEG-POS' COMBINED WITH TONE CONTROL. *Print from original negative.*



'NEG-POS' COMBINED WITH TONE CONTROL. Print from stepped-up-contrast negative and positive, out of register, negative predominating.

There is, however, an extremely useful application of it to commercial work, which appears to be little known, and which I may indeed have originated, for I have never seen it mentioned anywhere, though I know it is used by several professionals to whom I have suggested it. This is a kind of 'ghost' effect, which is obtained by making a contact transparency of almost the equivalent density as the negative, but not quite, allowing the negative to have slight dominance when the two are registered. (By the way, in all these processes depending on a negative and a positive, I find it much easier to have one of them on a glass plate. It doesn't matter which, but registration is far easier when one of the two is a solid, than when both are floppy.)

In this case there is no lateral shift, in fact there is no attempt to get a pseudo-relief effect at all. Suppose, for example in a wedding group, it is desired to make the married couple stand out from the rest, they are bleached out entirely from the POSITIVE (taking great care over the outlines), which is then fixed and dried and bound up in exact register with the negative. A print from this combination will then show the principal figures just as they would have normally appeared, but the rest of the group will have been 'faded out' to any degree that has been chosen. This often makes a welcome, and very popular, change in groups of this kind.

Another application is in commercial work, such as photographs of machinery, buildings and things of that kind, many of which are most effective when made to stand out against a ghost-image of their surroundings. In some cases the outlines are very tricky and a lot of care has to be used in the bleaching, to avoid going over the edges, but many a commercial print has been enhanced to such an extent by this means, that it has been eagerly snapped up, where an ordinary print would have had a luke-warm reception.

Returning to the purely pictorial use of this method, there are one or two other ways of using it that may interest the picture maker. If the subject is a silhouette, or anything in which all detail except the outline can be ignored or eliminated, it is then possible to get either a complete BLACK line all round the subject, or a complete WHITE one, according to whether a negative or a positive is used for the final print. This can be done in one of two ways: either the negative can be separated from the positive in the enlarger carrier by such an amount that the image of one of them is, therefore, slightly larger on the easel than the other, when the different focus of the two has to be compensated for by considerable stopping down; or a very slightly larger positive transparency can be made on the easel itself and then bound up with the negative. The latter method involves making a contact print first, which is placed on the easel; the projected image being adjusted first to exactly neutralize it, and it is then made a little larger.

With an auto-focus enlarger this is easy, but it takes a little time when one has to correct both the size and the sharpness. It will be realized that this is only applicable to subjects with no detail, relying purely on outline, as any detail simply becomes a hopeless muddle.

Two points in these processes need to be stressed. The first is that the amount of shift in the pseudo-reliefs must be proportionate to the size of the negative; and the second is that contact prints are impossible, as the emulsion surfaces are face to face so that direct contact is impossible . . . they must be projected.

Solarization

One is hesitant to say almost anything about this process, because whatever one says will probably turn out to be untrue, for it is quite the most tricky and uncertain of all the photographic processes. In fact I would go so far as to say that it is almost impossible to get two similar effects even under the most careful conditions. At any rate I have never managed to repeat any given result myself.

Essentially what pictorialists call 'solarization' is not what the text-books mean by that term, but it is one of those words like 'gramophone' and 'photogenic' which have been generally adopted in a loose way, and which it is almost impossible to correct at this stage. The great Clerc will not have the pictorialists's 'solarization' at any price, insisting that it is a mixture of reversal, the Sabattier, and the Eberhard effects. This is quite true, but for the purposes for which we are likely to use it, and because it is so universally understood by that name, I think we must continue to use the word SOLARIZATION to express what we mean!

As a matter of fact Clerc is very cagey about the whole business, and puts his comments on it in small bits scattered about the book under different headings, and starts off by suggesting, as I shall do, that any experiments along these lines should be done by way of either transparencies or new negatives, thus avoiding almost inevitable catastrophe to originals.

The effect that the pictorialist hopes to get by these means is a partially reversed image, with either a white or a black line surrounding it. Now this line is quite different from the one we were discussing under the 'Neg-Pos' heading, for it is not confined to the actual outline of one object, but forms everywhere that two contrasting tones are adjacent to each other. As far as I know it was first exploited pictorially by the well-known French photographer Man Ray in the early '30's, exhibiting a number of prints in which total or partial (mostly the latter) reversal was combined with this 'black-line' effect. They made a great stir and the method has been used by exhibitors from time to time ever since in various forms.

Reversal, or true solarization, is easy enough, but it is when we try to get

SOLARIZATION



Straight Print from original negative.

Print on the right from Solarized transparency (on Ilford Stripping film) shows characteristic blackline effect.



Print from Solarized Transparency.



Final print from Solarized transparency, showing negative effect with white outlines.

the characteristic line that the trouble begins. The first thing is to choose a suitable subject, make your exposure normally, and then if you are brave enough, proceed to doctor the negative. Far the wiser course, however, is to make a new negative, or at least a duplicate when you are shooting the original, and to proceed from there.

The way it is usually given in the text-books, when they do mention it, is something like this: choose a subject with fairly high contrasts such as a figure in light clothes, or none, against a black background. After exposure develop in a dish with normal developer, and when it has had about $\frac{1}{2}$ of the correct time in the developer, flash it with white light for a moment, and then continue development. The light line should then form.

That sounds all very well, but just consider the variables! In practice I never attempt to tamper with the original negative, but do it all at leisure afterwards, via a transparency. This not only gives safety, but it gives two stages in which one can play tricks, and as one would naturally use a slow emulsion both for the positive transparency and the new negative made from it, one has a much more tractable material to deal with.

In speaking of the 'black line' it should be remembered that it is only black on the print . . . on the negative it is a clear line, and in this lies another variant: sometimes one may like to try the effect of a white outline instead of a black, in which case the solarization is done on the intermediate positive, and a straight negative made finally from that.

Not all materials will give the line, and it varies in intensity with the (a) length of first development, (b) amount of fogging light, and (c) length of second development, and lastly (d) in any perverse way it likes!

My usual method is to make a straight and soft positive, and then by contact make three trial exposures on slow (ordinary) film to get approximately the density of the original negative. The time of full development is noted, and a new sheet placed in the frame and the chosen exposure given. A third of the time of development is then given, and the room light turned on directly above the dish, as quickly as one can turn it on and off. This is generally a good starting point with a slow emulsion, and may prove right at the first attempt, with a 60-watt lamp at about 5 feet.

The film is allowed to develop for the full time, and fixed. If it is too dense it may be reduced with Farmer's. If it is too 'positive' the fogging light must be reduced. If the line is not there, then start all over again. It is great fun, but don't expect to get there the first time! I have had great success with many of the process emulsions, and with Ilford Dry-Stripping Film for the transparency and the new negative. It means that a decent amount of light is permissible so

that one can see part, at least, of the effect. The trouble is, with so many places in which variations occur, it is most difficult to work to anything approaching laboratory conditions, and when in addition all emulsions do not behave in the same way, nor even all give the characteristic line, all one can say is 'go to it, and I wish you luck!'

Analagous to this process is the use that has been made from time to time of true solarization for obtaining a positive from a positive, or more usually a negative from a negative.

In this case the original material is given a pre-determined fogging exposure, and, when the second exposure is made on it, it will then develop as a counterpart of whatever is used for printing on to it. Here again, the conditions involved are almost beyond the scope of the ordinary worker unless he wants to give up a long time to experimenting, but it can be worked out very exactly. Before the war Agfa had a film actually on the market called 'Direkt Duplikat' from which one could make a new negative from a negative, by normal exposure and development, and I understand that there is at least one similar film on the market now.

Perhaps this does not strictly come under the heading of dark-room control, it is a most handy method of making spare negatives when one may want them. Whether or not one can play tricks with this material and get the Sabatier line and so on, I just do not know, as I have never had enough of it to be able to experiment, but when it is freely available, it should be worth trying.

Optical Control and Diffusion

So far, in this section, we have largely been talking of chemical, or at least physical controls, but it must not be forgotten that there are tremendous possibilities in photography for optical control also. It may be asked: what is optical control? And the reply probably should be in one word 'distortion'. Granted this, then what of it? Don't we start with a fundamental form of distortion by compressing three dimensions into two in practically everything we photograph? I know this is begging the question, and that there are accepted kinds of distortion, and kinds that the human eye, or rather brain, will not willingly accept; nevertheless some of these distortions can be eliminated and some can be exaggerated as we wish, and so we have another field in which we can exercise some form of control.

Probably the best known control of this kind is in what is known as 'correction of verticals', but it is one that is not nearly as much practised today as it used to be for two reasons: first because pictorialists have seen the dramatic possibilities of tapering skyscrapers and similar subjects, and secondly because

the advent of the miniature camera with no means of raising the front has made most people accept a tapering building as fairly normal. There are times, however, when it is desirable to make these verticals parallel in the print, and it is here that our first control comes in. There are, broadly speaking, two methods by which we can do this: first by just tilting the easel of the enlarger in such a way that the broader end (the base) of the building is brought nearer to the lens, then, as that end is getting less enlargement than the other, it will only be necessary to tilt the board until both ends of the building are the same width. Naturally one end will be badly out of focus, so the only way to deal with the matter is to focus a point as near to centre as possible, when the two ends will be out of focus. It is then necessary to stop the lens down until an acceptable degree of definition is achieved throughout. Unfortunately this nearly always involves an almost prohibitive increase in exposure, which is the price paid for an easy method.

Luckily, however, there is an alternative: to tilt both the easel and the negative carrier in opposite directions, and when this is done it is possible to arrive at parallelism while retaining sharpness over the whole area, and without much, if any, stopping down. BUT, and it is a very big 'but' indeed, it should be clearly understood that, even in photography, we don't get something for nothing, and in this case unless very special precautions are taken, we are only exchanging one kind of 'distortion' for another: the verticals are made parallel at the expense of the actual shape of the building, but our eyes are so excessively worried by these verticals, that we will swallow the other faults without a qualm. To get so-called 'complete correction' is so complicated, involving the use of a lens on the enlarger of shorter focus than the taking lens and many other precautions, that it is put out of court for the ordinary worker, and even if fully worked out, to get a true perspective involves a linkage between size of enlargement and viewing distance in each case.

In most cases that one is likely to meet with, it is enough to make the verticals parallel, and forget all the rest, but while on this subject, it is worth noting the curious fact that the human mind is perfectly happy with horizontal lines that converge, such as roads, but jibs most terribly when the vertical lines of buildings do it.

This ability to distort (or correct) in the enlarger, gives a large field in which the pictorialist can have fun. Perhaps the best known exponent of this kind of thing is Mortensen, whose print 'Circe' created quite a sensation when it first appeared, with the face and upper parts of the figure elongated and narrowed to to give a most extraordinary effect. Effects of this kind, analagous to the things seen in distorting mirrors at fairs, can be made by making the paper lie in waves, instead of flat, on the easel, and many interesting variations will occur to

enterprising workers, but it should be pointed out that most of these methods involve stopping the lens down very greatly, and therefore he must be prepared for long sessions in the darkroom due to the prolonged exposures. Under the heading of 'Optical Control' I would put the multitudinous methods of diffusion, employed by all pictorial workers who wish to produce a print that is not simply a literal rendering of what was on their negatives. Their name is legion, but broadly speaking there are three kinds of diffusion: (1) those that modify the sharpness of the image without altering its contrasts, (2) those that modify both sharpness and contrast, and (3) those that alter the texture of the final image on the paper.

It must be borne in mind that, whatever is done on the enlarger (as distinct from diffusion in the camera when the negative is made) will affect the **WHOLE** of the image, and has absolutely no selective action, nor differential focus, as you are working from one flat plane to another. With that in mind, let us look at the various methods available under the three headings.

(1) The simplest of all ways of diffusing the image is to interpose a sheet of clear plate glass in the path of the rays from the enlarger lens, and to rock it about. The closer it is held to the lens, the greater will be the displacement of the image, and there is no need to have a large bit of glass: a piece about 6 in. square is ample. Try placing it in the beam, and slowly rocking it (lateral movement will not do) and notice how the image moves about on the easel. The thicker the glass, naturally, the greater will be the displacement. Obviously this can be used for a part of the exposure, and the glass either kept still or removed altogether for the remainder, thus any degree of diffusion can be made at will.

Another simple method is to rack the enlarger in and out during the exposure, allowing the image to expand and contract, but the movement must be very slight, and I hesitate to suggest this method, as very few enlargers are capable of being steady enough to ensure an absence of severe blurring, which we don't want.

Next comes the use of a soft-focus lens on the enlarger, and this is capable of giving some very lovely results, but it has two rather severe drawbacks: most of these lenses are not fully colour-corrected, and hence may give much more diffusion in the print than that which is seen visually; if such a lens is used, it must give its diffusion for the whole of the exposure . . . there is no chance of partial modification.

Diffusion Discs and Materials

Diffusion Discs are another easy means, and they can, of course, be put on and taken off during the exposure, or better still fixed on a swinging arm, and

flicked over when needed. There are many commercial ones obtainable, but there is also plenty of scope for home-made experiments: crinkled cellophane, glass with tiny drops of gum on it, a fixed-out plate with scratch lines on the emulsion, in fact almost anything that will split up the rays without undue spreading. In all these cases it is possible to vary the effect by leaving a clear part of varying size in the centre, or as an annulus round a matted centre. None of these methods will have any marked effect on the contrast of the image.

(2) The use of chiffon, net, or metal gauze, on the other hand, has a marked effect on contrast, due to the fact that all these materials have the property of spreading the darks (in the print) into the lighter parts, which must inevitably give a kind of degradation. The method of use is exactly the same as for the diffusion discs, and can also be used for a part of the exposure if desired, and must, like the former, be used in fairly close proximity to the lens, as otherwise they will almost destroy the image altogether. It is sometimes worth while to use these materials for the unique effect they give, and to regain the lost contrasts by stepping up the grade of paper used. One grade up will usually more than compensate for any loss, and bearing in mind that an exhibition picture usually needs to be bolder than one for hand or folio use, this little extra is an advantage for large work. This type of diffusion is probably the most widely used of any, and it can give very beautiful and characteristic results.

(3) Means for imparting TEXTURES to prints are ready to hand in most homes, except for the one beloved of our grandparents . . . Bolting Silk, which used to be used by millers, and may yet be for all I know, but is not very easy to get. I have found that some of the silks for the 'Silk-screen' process are quite satisfactory. The difference between 'texturising' and the other means of diffusion is that in this process some kind of pattern is printed on the paper at the same time as the image, and therefore in normal cases the texture screen is placed in contact with the printing paper. There are several kinds of screen sold commercially, and, if I may say so, most of them look like it! They are far too regular for pictorial effects. My own preference is for some sort of grain, and I use either Jap tissue, or ordinary tissue paper. The former has a watermark of lines, which must be made to come straight on the print, otherwise they look terrible. The normal way of working is to place a trial sheet on the easel with a piece of the chosen screen in contact with it, and a sheet of heavy glass on top. It is best to have a soft base, such as a few sheets of blotting paper, to ensure intimate contact. It may be necessary with ordinary tissue paper to try several different kinds, as they all vary in grain, and unless the work is very large and bold, it is easy to pick too coarse an effect.

One subsidiary use for this 'graining process' is to disguise the grain of

greatly enlarged miniature negatives, by making a virtue of necessity, emphasizing what you can't avoid, and making a feature of it! For this, it is best to use something with a very marked texture of its own.

Bolting silk has a character quite its own, both in texture and in effect, as it has a special way of breaking up heavy shadows, and many a print which has been ruined by clogged masses of detailless shadow, has been saved by the texture imparted by this means.

A further field for experiment can be found in actually photographing textures and using the resulting negative in combination with the picture negative. Here the texture negative will usually have to be used in contact with the other negative in the carrier, for few of us could afford to make 15×12 or 20×16 negatives to lay on our exhibition prints; so it is obvious that the texture negatives must have the image on a very small scale indeed, or the 'reseau' will drown the picture. Various materials will suggest themselves for this purpose, but get a long way away from them, and keep the negative very thin. There are a few materials that can possibly be used direct in this way, and I have had some useful and promising results from Nylon fabrics, though the difficulty of getting the lines to go where you want them is not lightly overcome. Of course any of these direct-contact methods are impossible with really small negatives, but from $3\frac{1}{2} \times 2\frac{1}{2}$ upwards they can be quite pleasant.

One or two final words on this subject: any of the chiffon and net substances of section (2) are unsuitable for high-key work, as they tend to kill the lightness and subtlety that is the essence of such prints; don't attempt to select the kind of tissue paper from a minute trial piece . . . take a good section of the print, not less than whole-plate; lastly, the proper place for a soft-focus lens is on the camera, in my opinion, and NOT on the enlarger, but try it if you must.

Tone Elimination

In this Section I have made no mention of the tone control process which has been developed so completely by my friend Edwin Broomer, as he has written several articles on it, and has made it especially his own. It is a very complex method, and tremendously versatile, but I feel that, just because of this, readers who are interested should get hold of the original, rather than a second-hand version.

Tone elimination, however, is another pair of shoes, and one that I have used quite a lot. In essentials it consists in getting rid of most of the characteristics of a photograph . . . the half-tones, and retaining only the two extremes. It is quite capable of being combined with several of the other processes spoken of in this section, but used alone it will produce some fascinating pictures, which



TONE ELIMINATION. *Print from original soft-focus negative.*



TONE ELIMINATION. *Final print after four stages of contrast increase, using Process film.*
'Lino-cut' effect.

though having some semblance to lino-cuts, yet retain in some queer way quite an indication of their photographic origin.

When I first took up this process, there were very few really hard emulsions to be had, nothing like the present Ilford 'Litho-neg' material, for instance, and so, if one wanted to get extremes, one just had to go on and on trying to get a more contrasty result each time.

I have never worked from a negative made with this end in view, but have always selected a subject that I thought might lend itself, afterwards, in which case the procedure is to make a positive transparency on the most contrasty material you have, via a condenser enlarger, and from that an even more contrasty new negative, by the same means. If the enlarger is set as near 1 : 1 as possible, the result need not be an enormous increase in size, in fact I always worked that way because of the increase in contrast that a condenser enlarger gives, until the advent of the modern extreme-contrast emulsions. Now, however, you can do the whole job by contact printing, though it may involve one or two more steps. The aim is, of course, to get the most contrasty final negative that is possible, with nothing but completely opaque highlights, and clear glass shadows. Starting with a full-bodied negative I have got to my goal in two stages using Ilford Litho-neg, but more often three or four stages are needed.

If material of this sort is not to be obtained, then 'process' film or plate is next best, and it sometimes pays to intensify each stage even if a contrast developer is used. In fact, some of the old books, which mention this subject, advise intensifying each negative and positive with the lead intensifier, though I think this is rarely needed to-day.

There are some pitfalls in the process, and the biggest snag is the proneness of all contrasty materials to show pinholes. This is understandable, for the slightest obstruction to the light results in what, with the degree of contrast they have, in a clear spot; so the greatest care must be taken to get absolute cleanliness all through. It is essential to have an even black backing behind the sensitive emulsion, otherwise one may easily get uneven tones due to reflex printing from the back . . . I have even had this from the worn baize in a printing frame.

This two-tone technique combines very well with neg-pos, and solarization will also give interesting results. In some cases there is no necessity to go the whole hog unless one wants to, and as the wreckage, in the form of 'half-way' negatives and positives, is still there at the end, one can go back and try various combinations of these with differing effects. They can be combined either with each other or with the original negative, and quite striking results can be made by ringing the changes with negative and positive, which is made easier if the whole job is done on thin film.

Conclusion

My purpose in these notes has been to give some indication of the ways in which it is possible to control the photographic processes by perfectly straightforward chemical and optical methods, without any recourse to the technique of drawing. In other words, to stick to modifications that are within the scope of the photographic process itself. There are vast possibilities, I am sure, that have as yet been unexplored, and the experimenter and the pictorialist will continually find new ones. This section has been primarily designed to whet the appetite, and I feel sure that anyone who has been interested enough to bear with me through these pages, will be interested enough to go further afield for himself.

Control in Fashion Photography

BY PETER CLARK, FIBP

THE great difference between Fashion and other branches of photography is that every picture is taken with the end in view of eventual publication in a newspaper, periodical, or even a circular, and the reproduction will eventually be seen by thousands of people. Consequently the original print must be of the highest quality, and each picture must be original and different in treatment, lighting, props., etc. It is impossible to repeat a successful treatment, especially if it is of a somewhat spectacular type, as the two pictures might appear in the same publication, even on succeeding pages! This is not likely to happen, for instance, in portraiture, where it is possible to give the same general treatment to backgrounds, lighting, etc., for many sitters—the results not being noticeably similar, due to the difference in features, apparel, etc., of each person; and in any case, the likelihood of two sitters comparing pictures from this point of view is somewhat remote.

There are many other reasons why I think Fashion is more exacting than other branches of photography. Among them are:—

a The clientele is much more sophisticated and knowledgeable in photographic matters. The majority of clients come constantly throughout the year, some even doing so several times a week. They are used to paying far higher prices for this work, and in consequence are exacting in their requirements. A point to remember in passing is that each satisfied client gained is an investment that may pay dividends for years.

b In many cases the picture has to conform to a layout. This can be extremely constricting at times, especially from the point of view of posing.

c The clothes are always photographed out of season: that is to say, Winter clothing in the Summer and Summer clothing in Winter. This can prove particularly awkward with out-door photography, which is becoming increasingly popular in Fashion work. A cotton dress looks rather silly taken against trees without a single leaf! Which brings me to my next difficulty.

d Backgrounds — to my mind the biggest headache in the business! My contention has always been, that to a photographer who knows the technical side of his business, the rest should be reasonably easy. The chief way of ringing the changes is by means of different backgrounds and settings. The difficulty here is that one either uses backgrounds that are not meant to convey any particular meaning, in which case a large selection of blocks, cubes, panels, etc., are needed; or else the setting is made to look authentic and this necessitates the hiring of furniture, scenery, flowers, drapes, etc., from firms specializing in this kind of business. These firms hire to film studios, theatres and photographers. Their rates are extremely high, and the furniture in the majority of cases is not in the best of condition.

When one realizes that a sitting may consist of a variety of garments ranging from, say, an evening dress to a bathing suit, and that each has to be taken against an appropriate background which must not be easily recognizable as having been used before, it will be realised just what a problem this can be.

e The clothes photographed have to be 'glamourized'. Usually they have not been made for the models who are wearing them for the photograph. These girls have to be on the ultra slim side owing to the fact that a photograph tends to make the figure appear more plump than it actually is. Therefore, the operator has to be an expert fitter and adept at pinning the garment so that it does not lose its original line. Here let me add that it is essential for the Fashion man to have a deep interest in all facets of women's clothing and Fashion, and to know the very latest trends which will be popular the following season in order that he can immediately seize upon the chief interest in a garment and be able to emphasize and show it to the best advantage.

Fashion photography is so closely bound up with the clothing trade that perhaps a few words on that subject, and how it works, will not be amiss. The great majority of business is not done with the leading Couture Houses in London, as one might suppose, but with the large wholesale houses.

There is no question that Paris still sets the fashions of the future for the whole world. Representatives from leading firms of London, New York and other leading capitals, all go to Paris to buy, to get ideas and adapt what they have seen to their own individual tastes.

There are two large showings in Paris — Summer and Winter collections; also two mid-season collections. It is with the first that the majority of Houses are primarily interested. The large wholesale firms send over their buyers and designers, who visit Houses noted for clothes of the type in which they are particularly interested. For instance, one designer in Paris may specialize in evening clothes and another in sports-wear. They are obliged to buy at least one model at each visit to a House. This they bring back and are allowed to copy. But whilst they are watching the collections they are remembering as much as they can of what they have seen. Usually they get back to their hotels as quickly as they can, so that they can make sketches, showing special points, details and trends which they will adapt later on.

Having arrived back in London they in their turn set about making a collection, bearing in mind what they have seen in Paris. When their collection is finished, they start to show. Usually the first day's showing is for the Press, and this is called a 'Press Showing'. Before this occasion many of the Houses have about a dozen garments photographed and about as many prints of each garment ready to hand out to the Press. This entails quick work on the photographers' part, as usually most of the garments are rushed through at the last minute.

From this it will be seen that the photographer must be very cognisant of the trends in Paris so that he can emphasize the new lines as they appear. Personally, I usually go to Paris at least once a year so that I can get the 'feel' of what is going on in the Fashion world. There seems to be an electric atmosphere in Paris which is a great help in keeping one's hand in.

I would not like the reader to run away with the idea that the big Couture Houses in London are to be ignored altogether, as they do a considerable amount of business. The standard of living in England has risen so much in the past twenty years that the average woman is very much more fashion-conscious than previously, when only the rich were interested in smart clothes. Now the gradual expansion of the wholesale houses has allowed the general public to buy clothes, which are both smart and up-to-the-minute, and at a cost which is within the reach of all.

Types of Fashion Photograph

There are various kinds of Fashion picture. First, the plain 'straightforward' type, whose chief purpose is to show the garment in its entirety, whilst making no pretensions to artistry. This type is used for catalogues, cut-outs, etc.

Next comes the advertisement which sets out to show the garment to the best advantage, and at the same time requires a pleasing and original picture.

Finally, we have the editorial picture that relies chiefly on charm, originality of treatment, smartness, etc., the main role being to show the latest trend, but without trying to bring out every detail in the garment.

What equipment is necessary for this particular branch of photography? Let us go into the studio and see.

Cameras

For the majority of work a Studio Stand Camera is used — usually whole-plate or 10 × 8. The larger the better from the point of view of retouching, which is a great necessity, due to the need for 'glamourization' of the garment, and even more, to the need to correct faults in clothes which do not fit the model sufficiently well, as previously stated.

The Lens

As long a focus as possible to obviate distortion. However, this is usually governed by the height and length of the Studio. It must be borne in mind that the great majority of shots are full-length, and in consequence, a feeling of space is an advantage. Personally, for the majority of work I use a 12 in. $f/4.5$ Taylor Hobson Cook Aviar with the whole-plate negative stock. My studio, unfortunately, is not as high as I should like, being only about 12 ft.

Control by Exposure

Before the final taking, we usually stop down to $f/8$ or $f/11$, especially in the straightforward type of picture. This is to bring all areas of the figure into focus so that the garment photographed shall be sharp and clearly defined. Sometimes in Editorial Photography, where a somewhat misty and romantic atmosphere is sought, there is no stopping down. In these circumstances a slower film than usual is used, so that one can have more control over the exposure. There is not so much fear of movement on the part of the model, as the larger aperture still permits a relatively shorter exposure than would be required with the faster film with the lens stopped down.

The studio type of camera is usually fitted with a bellows-type of shutter operated by a hand-bulb, and all exposures are a matter of personal judgment. My own opinion is that this method is far from ideal. I would much prefer to use a shutter with various pre-selected speeds, as found on the usual Compur type of shutter in conjunction with an accurate exposure-meter. Unfortunately, in this country it seems impossible to find such a shutter with an opening large enough to cover the diameter of a 12 in. lens. I am confident that if such a shutter were put on the market carrying speeds of, say, 10th, 25th, 50th and

tooth second, it would be in great demand. Especially is this true with colour photography, where really accurate exposure is not only desirable, but absolutely essential.

For out-door work the majority of photographers use a Rolleiflex for its swiftness of handling and the remarkably sharp negatives produced. When correctly processed, these project to extremely large sizes without noticeable grain or loss of sharpness. For the same reason, the Rolleiflex is generally used for children. (It can readily be understood what a difficult problem this side of Fashion photography can be when it is remembered that pictures of this type are required to be appealing, and at the same time to show the garment to its best advantage — sharp and unruffled.)

There are times when I use a Speed Graphic with multi-flash. This combination is usually employed when working in private houses, exhibitions, etc., and also for children in natural colour. The reason for the choice in the former case is ease of transportability and lightness; and in the latter, the difficulty of ensuring a sufficiently quick exposure to arrest motion with a film of slow speed. The great drawback of this type of photography is the lack of control over the lighting — any subtleties being mostly a matter of guesswork and a sense of judgment won through years of experience.

Control by Lighting

Lighting, I consider to be the most important part in any field of photography. A knowledge of balance and control is absolutely essential, and when working in monochrome, it is necessary to have an inborn aptitude and feeling for light and shade, which can only be learned from the hard school of bitter experience.

Lighting in Fashion is of a necessity much more dramatic than in many other branches of the profession. As I have already said, the picture has to be arresting and the garment has to be photographed to show the texture of the material, intricacies of cut, line and so on. This is achieved mainly by the use of spotlights, of which a considerable number are used.

How does one start to light a Fashion shot? To my mind there are two ways. Either one starts with the required amount of frontal light and then balances in with the spotlights; or else one starts lighting with spotlights the particular features that are required to be emphasized, and then balances the lighting with the front light. As the reader can see, considerable knowledge and experience of lighting control is essential. Both methods can be equally successful. I, personally, use the former for the more straightforward type of picture, and the latter for the more dramatic and sophisticated kind.



We will now examine the various types of lights required. Naturally each photographer has different equipment and personal likes and dislikes in this matter. But I think that most systems are based upon much the same principle.

The Front Light

This of a necessity must be a soft light causing no shadows to fall on the background, and is usually made up of a series of lights which can be switched on and off individually, or else dimmed as a whole, or both. The fitting that I use is a bank of 500 watt lights set in a white trough. Each light is cupped in front so that all the light falling on the sitter is reflected, which gives a completely shadowless result. Each of these lights is on a dimmer and a separate switch. This unit is swung on a counter-balanced arm which runs on a railway attached to the ceiling. The railway is sufficiently long for the unit to be swung to cover any part of the studio, thus giving complete control.

Spotlights

These are the 'paint-brushes' of the Fashion man, and a considerable number are employed.

i. 5000-watt Mole-Richardson Spotlight

This light is used mostly for colour work, where particularly powerful lighting is required, due to the slowness of the film; but I also use this light when a perfectly white background is required, and sometimes it is also used as a sun-spot from the back. It is not practical to throw this light direct on to the sitter as it is so powerful that it is impossible to prevent the eyes from watering, and in any case, it is so intense that the front-light and the other spots would be thrown out of control.

ii. 2000-watt Mole-Richardson Spotlight

I use two of these lights, chiefly for throwing shadows on to the background, as sun-spots, and for bringing out detail in dark fabrics. Again, this light is not generally used direct on to the sitter, due to its extreme brightness;

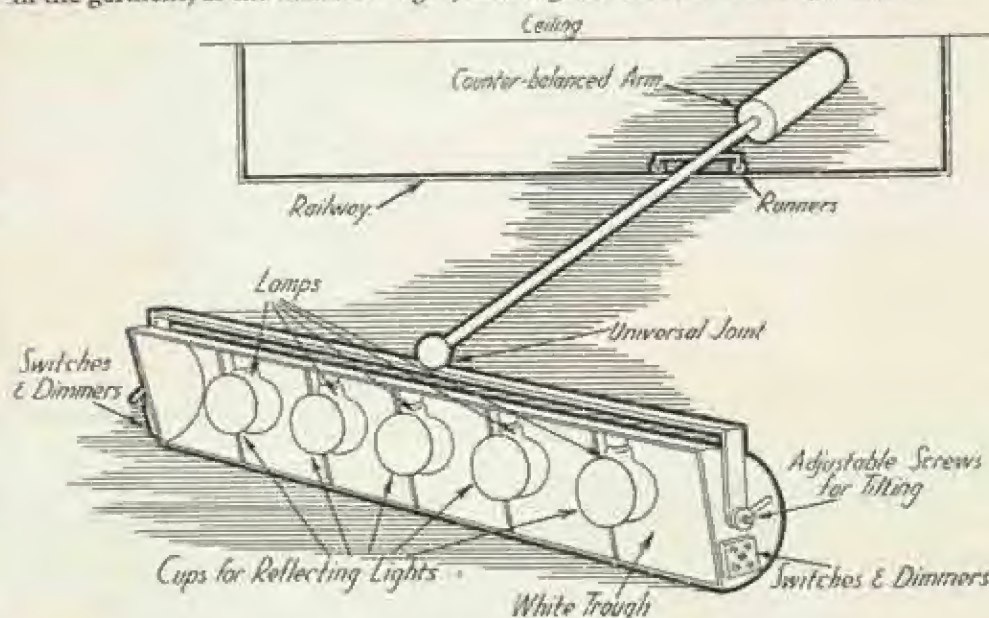
WHITE SUIT WITH PLEATED SKIRT

This suit lends itself pleasantly to high key treatment. Spotlights were not used on the figure at all, only a 5Kw. on to the background to give a completely white result. Soft reflected light was the main front light a soft flood at 45 degrees to the figure and shining on to the skirt to bring out the detail of the pleating. The retoucher has slimmed the waist, softened the creases in the sleeves and under the arms and has also taken off a piece of the collar that was standing away from the neck.

but I often use it as the main sun-light in colour work where bright lighting is essential.

iii. 1000-watt Mole-Richardson Spotlight

I also use two of these lights. These are invariably used to bring out detail in the garment, as the main sun-light, and to give a dramatic effect generally.



Peter Clark's Lighting Bank for Fashion Work.

iv. 500-watt Spotlight

In this case also, two of these lights are employed. The first is used as a top spot, run on a short railway attached to the ceiling. (I would prefer to use

WHITE FOX CAPE

Fairly straightforward lighting was used for this picture. A black background was used to make a sudden contrast with the white fur. Care was exercised not to use too fierce a light on the fur and burn out all the detail. In this case a spotlight with a dimming attachment was used which enables the operator to give exactly the right power of light he thinks is required. If he is not sufficiently experienced in judging strength of his lights — and this is a thing that takes years of constant practice — he can avail himself of one of the latest light meters which will give correct information as to whether the negative stock has a sufficiently wide range of gradation to record both the lowest shadows and the highest highlights. The retoucher has carefully worked in any stray hairs that were not falling the right way and also has struck up highlights to give the fur a little more punch.



a 1000-watt light for this purpose. Unfortunately, the height of the studio does not allow such a large light to be used in case of cutting-in the top of the pictures with full-length shots.) The other light is generally used as a moulding light on the faces of the models in conjunction with the 1000-watt spots, which are focused on the garment.

All these spotlights are on separate switches and dimmers. I consider this to be most essential for simple and quick handling, and to ensure the necessary control over each light, so that one does not have to resort to the old-fashioned method of using diffusing screens, muslins, cut-out cardboard shapes and the like, which are so tedious to operate that the model slowly becomes more rigid and fixed, resulting in pictures lacking all easiness and spontaneity.

v. *Various Additional Lights*

These I call 'etcetera Lights'. They are usually of 500-watts and are used as fill-in lights, placed behind the model to bring relief when there is danger of the figure merging into the background; and as floor lights to lighten legs, and to bring out detail in the hems when the other lights are beginning to fall off. Amongst these lights I have a little baby spot of 100-watts, which is used on the face in highly dramatic shots of low key.

vi. *Arc Lights*

I sometimes use an Arc-light Spot when I wish to throw a particularly bright, sharp shadow on the background, but I seldom use this type of light on the sitter. The reason for this is that it is extremely difficult to judge the brightness, and consequently balance in the other lights, when mixing arc lighting (which gives a particularly blue/white light) with the somewhat yellow tones of half-watt lighting. Great experience is required and even then much depends on guess work, which is not a satisfactory method if high-quality negatives are required.

Processing

I consider this side to be almost as important as the initial operating. It can, and I am sorry to say, frequently does happen in many businesses, that the skill and patient effort of the operator in the studio is spoilt in these departments through insufficient care and lack of skill in the exercise of control by the darkroom staff.

There is no question that the best way of processing negatives is by time-and-temperature, so that all control is exercised initially in the studio and the actual development of the film is done by standardized methods. Unfortunately, as I have previously explained, the exposure is made with a bulb and not with a mechanically accurate shutter, so that the human element enters into things. I

defy anyone to give a hundred per cent. accurate exposure by this method. Consequently, development by inspection in the majority of cases is the rule. This allows to a certain extent, if not to correct, at least to minimize the faults on the negative that would otherwise result. We use the tank method and keep the inspection down to a minimum. (I do not wish the reader to think that each exposure is so faulty that all control is done in the darkroom! Naturally, if an operator is used to his studio and thoroughly conversant with the lighting, the variation from correct exposure is usually very little. Consequently, there is a set time selected for development, and only in extreme cases does the processor alter it).

Printing

If the subject has been correctly lit and the film correctly exposed and developed, the printing should be made as straightforward as possible. In this respect I do not see that there is any difference between Fashion and any other branch of photography. It is only in cases where a mistake has been made in either control of lighting or exposure in the studio, and this has not been rectified in the Processing Department, that the printer is called upon to put matters right. This is done by 'dodging,' 'printing-up' and all the other little 'tricks of the trade' that apply to all manner of printing, none of which are peculiar to Fashion work, and are only resorted to under duress. As previously mentioned, all pictures are for reproduction in the Daily Press or other publications, the majority of printing is of necessity on glossy paper. For my part I prefer double-weight paper unglazed; but this is only a personal fad. Many photographers use single-weight paper, subsequently glazed. There is one advantage of using unglazed paper, namely, that any finishing which may be necessary will not show so much as on a glazed print. This is of particular importance in the case of pictures taken on a Rolleiflex, as it is impossible to retouch more than very minor blemishes with a negative of 2½ in. square, and, in consequence, all the retouching has to be done on the print.

In my particular case, I enlarge my pictures from whole plate to 10 × 8 inches. For this I use an enlarger with a Mercury-vapour light-source. This choice may surprise some readers after my previous remarks on sharpness and brightness as there is no doubt that half-watt lighting through a condenser lens gives a sharper and crisper print. The reason for my preference is that there is usually a considerable amount of retouching and knifing on the negative, and if a condenser enlarger is used all this work shows up in startling clarity, whereas with Mercury-vapour it does not. Apart from this, I do not think there is any startling difference between our method of printing and that of any other type of photography.



Retouching

This department requires operators of great skill and highly specialized knowledge. No matter how careful the control exercised by the operator in the studio, his best friend in Fashion work is always the retoucher. She is the person who 'glamourizes' the garment, takes out creases where unsightly, 'slims down' figures that appear too plump and generally tidies up the garment so that it is shown to the very best advantage in the finished print. She must be up-to-the-minute Fashion conscious, knowing at a glance exactly which features require striking-up, exaggerating or taking away. This can be extremely difficult, especially as in most cases the retoucher does not even see the garment when it is photographed in the studio. Her work must be exceptionally fine so as not to be visible on the glossy print. She must be an expert in the use of the Air-brush, as much of the slimming of the model is done by this means, using red dye. She must be an expert with the knife, which is generally used for slimming the figure when taken against certain tones of background; straightening pleats; toning down too bright highlights, and so on. In fact the knife is almost as useful to her as a pencil is to an artist. All this requires long training and considerable enthusiasm for the subject.

There is one point in which the retoucher — and the operator also — scores over the portrait photographer, and that is in the sitters! These are, for the most part, professional models, who are much more attractive than the average sitter. However, I am insistent that I will not use amateurs. Showing off clothes is a specialized business. An aptitude is essential, not to mention a good figure. If a model is shy, disinterested, or has no clothes sense, it is utterly impossible to take a good Fashion photograph. There are long periods when a model must stand still — often in difficult and uncomfortable positions — whilst the lighting and dress are being adjusted. Unless the model is fully experienced, it is utterly impossible to obtain a pleasing, spontaneous and easy picture.

COTTON EVENING DRESS

This is a fairly straightforward outdoor shot. A red filter was used to give the effect of moonlight. The figure was positioned so that a shaft of light fell on the bodice, this being the chief feature of the dress. Quite an amount of retouching was done on the print. The reason for this print retouching was that the photograph was taken on a Rolleiflex which has a negative area of $2\frac{1}{4}'' \times 2\frac{1}{4}''$. As this is far too small for even the most experienced retoucher to attempt to touch, everything that has to be altered or struck up has to be done on the print. The waist made smaller, the gatherings over the bust made neat and the sleeves have been straightened. A fairly dark print was made, particular care was taken to print up the edges and corners of the photograph so as to draw all attention to the centre of the picture and to heighten the effect of moonlight.

The Qualities of a Model

I am often asked what goes to make a good model. Firstly, of course, she must have outstanding good looks, or rather, features that photograph well from almost any angle. When a dress is being photographed, all the attention is directed on that aspect, and special treatment to the face is less often necessary than in portraiture. The model must be tall and slim — about 5 ft. 7 in. without shoes, bust 33-34 in., waist 22-23 in., hips 35-36 in. She must have a flair for wearing clothes so that she always looks as if the garment had been made for her, and not as if it had just been put on for the photograph. Finally, she must be sympathetic to the photographer, so that she understands exactly what he is asking of her in the matter of posing, and can fall naturally into the required position.

There are thousands of girls who are pretty and wish to become photographic models. Every day we have a stream of girls coming to the studio wishing to register for this purpose, but very few of them come up to the required standard, and, in fact, the number of 'top-flight' girls who really make a good living out of modelling do not number more than 30-40 in London at any one time. Most of these models register with a reputable agency which handles all their bookings and photographers prefer this to dealing individually with each girl.

Colour

Many times when we are taking a dress in the studio we, or the client exclaim, 'Wouldn't it look wonderful in colour!' There is no doubt that the ideal way of showing a garment is in natural colour rather than the more prosaic black-and-white. What is the future of colour in this particular sphere of photography? Although there is quite an amount of natural-colour photography taken in Fashion, at the moment we are only touching the fringe of what is to come — as come, I am sure it will. I visualize in the years ahead that all Fashion will be in colour, and black-and-white will disappear completely. Although there are one or two processes on the market at the moment which are extremely good, and fairly easy to operate, from the technical point of view we are not going ahead as quickly as might be supposed. The reason for this is, I am sure, the very high cost of colour blocks and the shortage of skilled men who understand this side of the blockmaking business. Until the cost of colour blocks comes down to a reasonable figure, and it is not a toss-up as to whether the finished result will be anything like the original colour picture, colour photography will remain an extravagance on the part of the advertiser, and will only be indulged in for special subjects for prestige advertising, or by the extremely rich advertiser to whom money is only a secondary consideration.

I am not going to deal with the various processes in colour photography, as this subject is being fully dealt with by an expert in another part of this book. When colour does become the rule rather than the exception, how will it affect the Fashion man?

As far as I can see, it is going to make his job infinitely more difficult than it is at present, particularly with regard to the background problem. Whereas things are difficult now, at least the picture is in black-and-white; but when colour becomes the rule, in addition to all the difficulties that I have explained on this subject, the question of background toning in with the garment will increase this already difficult problem to frightening proportions. For this reason alone I think that colour photography will be always far more costly than black-and-white. At the moment prices are extremely high, but obviously they will tend to fall as it becomes more popular.

Black-and-white photography has greater latitude in balance and control of lighting, processing, etc. If a slip-up occurs in any of these departments, it is possible to rectify or at least, to minimize the error. With colour this is not so; every stage of the process must be absolutely correct. Finally, it is practically impossible to retouch such processes as EKTACHROME or KODACHROME, which at present are the simplest to handle, and which give extremely accurate results. All this means that much more time and attention is needed to handle a picture in colour than in black-and-white, and all the observations that I have made on control in relation to Fashion work will apply to an even more marked degree when the picture is in colour.

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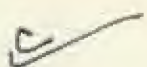
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